Vol. I

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1934

No. 208

HERBERT H. WAXHAM, DOING BUSINESS AS WAXHAM HATCHERIES, PETITIONER,

vs.

SAMUEL B. SMITH AND THE BUCKEYE INCUBATOR COMPANY

ON PETITION FOR CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE EIGHTH CIRCUIT

PETITION FOR CERTIORARI FILED OCT. 8, 1934.

CERTIORARI GRANTED NOVEMBER 5, 1934.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1934

No. 208

HERBERT H. WAXHAM, DOING BUSINESS AS WAXHAM HATCHERIES, PETITIONER,

vs.

SAMUEL B. SMITH AND THE BUCKEYE INCUBATOR COMPANY

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT

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Names and Addresses of Solicitors.

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Cleveland, Ohio.

IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
CENTRAL DIVISION

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs,	)	
vs.	)	IN EQUITY NO. Q-69-M
HERBERT H. WAXHAM, doing business as WAXHAM HATCHERIES, Defendant.	)	

CITATION

UNITED STATES OF AMERICA, SS:

TO SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, GREETING:

You are hereby cited and admonished to be and appear at a United States Circuit Court of Appeals for the Ninth Circuit, to be held at the City of San Francisco, in the State of California, on the 10th day of September, A. D. 1932, pursuant to Notice of Appeal by Order Allowing Appeal in the Clerk's office of the District Court of the United States, in and for the Southern District of California, in that certain suit in equity wherein you are plaintiffs and Herbert H. Waxham is defendant, to show

cause, if any there be, why the final decree made, entered and filed August 2, 1932, in the said cause mentioned, should not be corrected, and speedy justice should not be done, to the parties in that behalf.

WITNESS, the Honorable Paul J. McCormick, United States District Judge for the Southern District of California, this 12th day of August, A. D. 1932, and of the Independence of the United States, the one hundred and fifty-seventh.

Paul J. McCormick
U. S. District Judge for the Southern
District of California.

[Endorsed]: Due Service and receipt of a Copy of the within Citation is hereby admitted this 12th day of August, 193.... Leonard S. Lyon Solicitors and Counsel for Plaintiffs Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

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CITATION ON CROSS-APPEAL

UNITED STATES OF AMERICA ** ss.

TO HERBERT H. WAXHAM,
doing business as WAXHAM HATCHERIES,
GREETING:

You are hereby cited and admonished to be and appear at the United States Circuit Court of Appeals for the Ninth Circuit at the City of San Francisco, California, thirty days from and after the day this citation bears date, pursuant to an Order allowing a Cross-Appeal by plain-

tiffs, filed and entered in the Clerk's office of the District Court of the United States for the Southern District of California, Central Division, from a final decree signed, filed and entered on the 2nd day of August, 1932, in a suit wherein you are defendant and SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY are plaintiffs, In Equity No. Q-69-M, to show cause, if any there be, why said decree should not be corrected and why justice should not be done to the parties in that behalf.

WITNESS the HONORABLE PAUL J. McCORMICK, United States District Judge of the Southern District of California, this 12th day of August, 1932.

Paul J. McCormick
United States District Judge for the
Southern District of California.

ACKNOWLEDGMENT OF SERVICE OF CITATION.

Service of the above citation accepted on behalf of HERBERT H. WAXHAM this 13th day of August, 1932.

Raymond Ives Blakeslee
Kelly L. Taulbee
Attorneys for defendant.

[Endorsed]: Filed Aug 15 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
CENTRAL DIVISION

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs, vs. HERBERT H. WAXHAM, (*dba* WAXHAM HATCHERIES) Defendant.	No. Q-69-M Attorneys for Plaintiff: LYON & LYON DAVID B. HEAD, SPL. MASTER

DATE Month	Day	Year	FILINGS—PROCEEDINGS
Nov.	22	1929	Fld bill of complaint infringe of patent. Fld. prae & issd subp ad res
"	23	1929	Made patent report
"	26	1929	Fld subp ad res. Ret. exec.
Dec.	9	1929	Fld Answer of Deft.
"	24	"	Fld. plfs. motion & notice to refer cause to Spl. Master. Fld. affds. of R. L. Train, Joseph J. Taggart, Russell sutton & C. R. Jenney & Henry Richmond.
"	30	"	Fld. mo. to defer hrg. on mo. to refer to Spl. Master & ent. proc. on hrg. same & contg. 2 wks. to hear mo. to refer.

Jan.	13 1930	Ent. proc on hrg mo to refer to Spl Master & oppos thereto & ent ord ref—counsel to prepare order. Exceps noted for deft.
"	11 "	Fld memo brief behalf deft in oppos to mo to refer case to Spl Master & fld affid in oppos thereto.
"	13 "	Fld affid Joseph I. Taggart
"	15 1930	Fld & Ent Ord of reference to David B. Head, as Spl Master
Mar	3 1930	Fld. Stip as to use of uncertified copies of patents & publications.
Mar	25 1930	Sw. David B. Head as Spl. Master. Fld Oath of Office
Aug	1 1930	Fld. report of Spl. Master favor Plf. Fld copy of Notice filing report. Fld 6 vols reporters' transcript.
Aug	7 1930	Fld Notice & Motion for extension of time to file exceptions to Masters report.
Aug	11 1930	Ent. Ord denying Motion for extension of time to file exceptions to Masters report. Exception Noted.
Aug	15 1930	Fld. Plfs. exceptions to report of Spec. Master
Aug	19 1930	" Defts " " " " " "
Aug	28 1930	Fld. Defts notice of motion & motion to reopen case to take newly discovered evidence.

Sept 2 1930 Ent. Ord. contg. 10/27/30 on exceptions, etc., report of Spec. Master,/ on stip re-

Oct 1 1930 " "/ settg 10/22/30-10 AM " " " " exceptions & vacatg setg 10/27/30 2 PM

Oct 14 1930 Fld Notice of Motion to take newly discovered evidence on behalf of Deft. & Affid in support thereof.

Oct 16 1930 Ent. order resetting for hearing on Masters report, exceptions thereto & motion to reopen etc. for 12/2/30 10 AM.

Dec 1 1930 Fld opening brief of deft on exceps to Masters report. Fld defts affid Rolla Laury in support suppl mo by deft to reopen case. Fld affids; John L. Robbins, Henry Andrews, R. F. Clarday, Golden Fullington, Roy Fullington, & A. J. O'Brien resp., in behalf of deft.

Dec 2 1930 Fld & ent ord allowg withdrawal of Fullington Exh "A" & amend ans to conform to proofs to be taken. Ent proc on hrg mo to re-open case & take newly discovered evidence & ord grantg mo to take evidence on two prior uses of Fullington & Lawry by depos—deft to take depos in 2 wks & ptf within 2 wks thereafter—deft to pay expenses of counsel & witnesses & $250.00 a/c atty fees to ptf.

Counsel to prepare form of ord & submit to court for approval. Ent ord hrg on exceps to Masters report be stricken from cal. Fld ptf's memo on mo deft to re-open.

Dec 3 1930 Fld & ent ord re-opening case for tak'g fur proofs & refer'g cause back to Spl Master.

Dec 6 1930 Fld amendment to answer of deft.

Dec 9 1930 " suppl amend to defts answer.

Dec 30 1930 Fld notice & order and deposition of Rolla Lawry on behalf of Deft.

Jan 14 1931 Fld receipt of Ely & Barrow for $250.00 purs. to terms imposed.

Jan 14 1931 Fld reporters transcript of proc. on hearing of Defts Mo. to reopen hearing.

Feb 3 1931 Fld. depos taken at Cleveland. Fld. exh A1, A2, A3, A4, A5, A6, A7a, A7b, A7c & A8 to depositions.

Feb 16 1931 Fld notice of motion & motion to vacate ord reopening cause etc Fld Affid of Albert L. Ely

Feb 21 1931 Fld. deft's showing in oppos to ptf's mo to vacate ord re opening case.

Feb 23 1931 Ent. proc hearing motion to vacate order re opening cause etc. Ent. Ord Deft. file Depos. by 3/5/31. Ent order denying motion to vacate order re opening etc.

Mar 2 1931	Fld Depn on part of Defts. Fld Exh 66 (79 sheets)
	" " A. L. Ely et al.
Apr 21 1931	Fld. Kelly L. Taulbee for exten. time to file deft's reply brief before Spl. Master & fld. ord. thereon.
Aug 21 1931	Fld. su*pl*emental report of Spec Master & copies of notice.
Sept 4 1931	Fld Stip as to hearing on exceptions to Masters report on reference & Suppl report on re-reference.
Sept 8 1931	Fld exceptions to Suppl. report of Spec Master on re reference.
Sept 14 1931	Ent Ord contg to 10/22/31 hearing on exceptions to report of Spec. Master.
Oct 22 1931	Ent. proc on hearing exceptions to report of Spec. Master & Ent order submitting. Fld Exh. accompanying brief of Deft. on exceptions etc.
Oct 28 1931	Fld & ent ord deft have to 11/20/31 to reply brief to brief of plfs.
Oct 31 1931	Fld affds of Dougherty, Hamilton & Huster certified by clerk, U. S. D. Ct. of Colorado.
Nov 17 1931	Fld & Ent Ord extending time to 11/30/31 to file brief of deft.
Nov 27 1931	Fld & Ent ord plfs have 20 days fr. fil'g deft's reply brief due 11/30/31, to file reply brief.

Nov 30 1931	Fld brief of Deft. on exceptions to Master's report.
Dec 18 1931	Fld Ord Ext. time for Plf. to file reply brief to & incl. 12/30/31.
Dec 29 1931	Fld plf's reply brief.
Feb 13 1932	Fld defts brief in reply to ptfs reply brief.
Feb 15 1932	Fld & ent ord extg time to 2/12/32 to file & serve final reply brief.
Feb 15 1932	Fld & ent ord extg time to 2/13/32 to file & serve final reply brief.
June 30 1932	Ent ord denying excepts to repts of Spl Master & ord for decree for complnts & allowg except. Notified Counsel.
July 2 1932	Fld notice of Motion Ret. 7/18/32 for rehearing & petn attached.
July 18 1932	Ent ord contg 8/2/32 for hrg petn for rehearing.
July 29 1932	Fld plfs reply & mo to dismiss petn for rehearing.
Aug 2 1932	Fld Affids F. W. Risser et al on behalf Deft. on petn for rehearing.
Aug 2 1932	Ent Ord denying petn for rehearing & except. noted. Fld & Ent Ord on findings of fact & conclusions of law Ent Ord signing filing & entering final decree. Fld & dock decree.

Aug 5 1932	Fld plfs memo costs.
Aug 6 1932	Fld defts memo costs on excepts to report.
Aug 8 1932	Costs taxed at $1686.67. Dock & ent costs.
Aug 9 1932	Fld reporters trans on petn for rehrg (1 vol)
Aug 12 1932	Fld petn deft for appeal. Fld assign errors. Fld bond on appeal in amt $2200. Fld ord allowg appeal. Citation sgnd by Judge McCormick ret 9/10/32. Fld citation served. Fld petn plf for cross-appeal. Fld assign errors. Fld ord allowg & fxg bond $250.
Aug 15 1932	Fld citation on appeal—served.
Aug 17 1932	Fld prae plf. & issd writ perm injunction.
Aug 25 1932	Fld bond of plf on cross appeal $250.
Sept 7 1932	Fld Writ on Injunc. & ret U S Mar thereon
Sept 7 1932	Order signed by Judge McCormick extending time to 11/10/32 to file record on appeal in CCA.
Nov 7 1932	Order signed by Judge McCormick extending time to 12/10/32 to file record
" " "	in CCA

Dec	5 1932	Order signed by Judge McCormick ex-
"	" "	tending time to 1/10/33 to file record in CCA., both appeals.
Dec	30 1932	Ord sgnd by Judge McCormick extg time 2/10/33 docket cause CCA.
Feb	2 1933	Order signed by Judge McCormick extending to 3/10/33 time file appeals in CCA.
Feb	3 1933	Made for Enr. papers. Rec. Enr. c/m Cert. under seal decree dock & index Eq. Jr. 28/556. Fld Enr. papers.
"	" "	Closed.
Mar	7 1933	Order signed by Judge McCormick ex-
"	" "	tending time Deft to 4/10/33 to docket appeal in CCA.
Mar	20 1933	Fld. settled stmt of evidence & stip & ord thereon allowg. Fld & ent stip & ord elim headings etc in printed record. Fld defts prae for appeal record.
Mar	28 1933	Fld Stip & Ord re book of Exhs signed by Judges Wilbur & McCormick
Apr	5 1933	Rec'd Parker, Stone & Baird Co (fr R. I. Blakeslee) a/c dep plf on appeal $500
Apr	10 1933	Order signed by Judge McCormick ex-
"	" "	tending time to 5/10/33 to file record in CCA.

[TITLE OF COURT AND CAUSE.]

BILL OF COMPLAINT

To the Honorable the Judges of the United States District Court for the Southern District of California:

Plaintiffs represent and state as follows:

1. That the plaintiff, Samuel B. Smith, is a citizen of the United States and a resident of Cleveland, Ohio, and the plaintiff, The Buckeye Incubator Company, is a corporation of Ohio, having its office and principal place of business at Springfield, Ohio.

2. Upon information and belief that the defendant, Herbert H. Waxham, is a citizen of the United States and a resident of Van Nuys, Los Angeles County, California, at which place he is engaged and doing business in the hatching of eggs under the title or designation of Waxham Hatcheries.

3. The jurisdiction of this Court depends upon the fact that this suit is one arising under the patent laws of the United States.

4. Upon information and belief that prior to October 26, 1916, the plaintiff, Samuel B. Smith, was the first, original and sole inventor of certain new and useful improvements in Incubators, not known or used by others before his invention or discovery thereof, not patented or described in any printed publication in this or any foreign country prior to his invention thereof or more than two years prior to October 26, 1916, not in public use or on sale in this country for more than two years prior to said date, not abandoned, and not patented by Samuel B. Smith or his legal representatives or assigns

upon an application filed more than twelve months prior to said date.

5. On October 26, 1916, the plaintiff, Samuel B. Smith, filed in the United States Patent Office an application for Letters Patent of the United States for said improvement.

6. That prior to April 16, 1918, Samuel B. Smith assigned the right, title and interest in and to the said invention and in and to any United States patent to issue thereon to the plaintiff, The Buckeye Incubator Company, and that after due proceedings upon the said application for patent there was issued to The Buckeye Incubator Company, aforesaid, United States Letters Patent No. 1,262,860 on April 16, 1918, whereby the exclusive right of making, using and selling the said invention and improvements throughout the United States for the term of said patent was granted to The Buckeye Incubator Company, aforesaid, its successors or assigns, as will more fully appear from the original or duly certified copies of the said patent and assignment to be produced in Court herein.

7. That under date of April 29, 1927, The Buckeye Incubator Company, aforesaid, being then the owner of the title in and to the aforesaid Letters Patent, did sell, assign and transfer to the plaintiff, Samuel B. Smith, his heirs and assigns, the right, title and interest in and to the said Letters Patent as will more fully appear from the original assignment or duly certified copy thereof to be produced in Court herein, and that by an instrument of the same date, Samuel B. Smith granted to the plaintiff, The

Buckeye Incubator Company, the exclusive license to manufacture and sell incubators of certain capacities embodying the Smith invention.

8. That the plaintiff and his predecessor in title, The Buckeye Incubator Company, have been at all times the sole and exclusive owners of the said patent.

9. That the said patented invention has proven to be of very great value, that the plaintiffs have expended large sums of money in the manufacture and sale of incubators embodying the invention thereof, that the incubators so manufactured and sold have acquired a high reputation and utility and have proven to possess superior functions and qualities over other incubators, that the plaintiffs are fully equipped to supply the demand for incubators embodying the invention of the patent, that the said patent has been widely recognized and respected, and that the validity of said patent has been established in litigations arising thereunder in various Circuit Courts of Appeal and District Courts of the United States.

10. That incubators manufactured and sold by the plaintiffs have been marked "Patented" together with the date and number of the patent aforesaid as required by the Statutes of the United States, and that in addition the defendant herein has been duly notified in writing of the patent aforesaid and of his infringement thereof.

11. Upon information and belief that the defendant, prior to and not more than six years before the filing of the bill of complaint herein, was in the possession of and

was and is using in the hatching of eggs at Van Nuys, California, or elsewhere in this District, an incubator or incubators embodying the invention of said patent No. 1,262,860, and particularly claims 1 and 2 thereof, is selling or offering such incubators for sale to others, and is threatening to continue the use and sale of the said incubator or incubators, thereby infringing the rights of the plaintiffs as secured by the said patent, all without the license or consent of the plaintiffs.

12. That by reason of the infringement complained of herein, the plaintiffs have suffered and are suffering irreparable loss and damage and the defendant has realized profits and gains which of right belong to the plaintiffs, and will continue to do so unless restrained by this Court.

Wherefore the plaintiffs pray:

1. That a writ of subpoena may issue out of this Court directed to the defendant, Herbert H. Waxham, commanding him to appear and answer all and singular the matters and things herein complained of, but not under oath, an answer under oath being expressly waived.

2. That temporary and permanent injunctions be issued out of this Court addressed to the defendant, Herbert H. Waxham, and his workmen, employees, solicitors, agents, attorneys and others claiming or holding under the defendant, enjoining and restraining them from in any manner directly or indirectly infringing upon the patent sued upon herein.

3. That the defendant be required to account for and pay to the plaintiffs all the gains and profits acquired by him and recompense the plaintiffs for the damages sustained by the plaintiffs by reason of the infringement complained of herein.

4. That the defendant pay the costs of this suit, and that such other further and equitable relief be granted to the plaintiffs as shall be found necessary or proper.

SAMUEL B. SMITH
THE BUCKEYE INCUBATOR COMPANY,
Plaintiffs,

Lyon & Lyon
By Henry S. Richmond
Their Solicitors

A. L. Ely
Jno. F. Obrein
Of Counsel

VERIFICATION

STATE OF OHIO)
: SS.
COUNTY OF CUYAHOGA)

SAMUEL B. SMITH, being duly sworn, deposes and says that he is one of the plaintiffs named in the foregoing bill of complaint, that he is the owner of the title in and to the said United States Letters Patent No. 1,262,860, that the contents of the said bill of complaint are true of

his own knowledge, except as to such matters alleged upon information and belief and as to such matters he believes the same to be true, and that he believes himself to be the original and sole inventor of the improvements in Incubators disclosed and covered in the said patent.

Samuel B. Smith

Subscribed and sworn to before me this 14th day of November, 1929.

[Seal] H. B. Perkins

H. B. PERKINS

Notary Public

[Endorsed]: Filed Nov 22 1929 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

---

[TITLE OF COURT AND CAUSE.]

ANSWER OF HERBERT H. WAXHAM, DOING BUSINESS AS WAXHAM HATCHERIES, TO THE BILL OF COMPLAINT OF SAMUEL B. SMITH AND THE BUCKEYE INCUBATOR COMPANY, THE PLAINTIFFS HEREIN.

1. The defendant admits the citizenship, residences, locations and capacities of the parties as the same are alleged in the first paragraph of the Bill of Complaint.

2. The defendant admits the allegations of paragraph 2 of the Bill of Complaint.

3. The defendant admits the allegation of paragraph 3 of the Bill of Complaint.

4. The defendant, on information and belief, denies each and every allegation of paragraph 4 of the Bill of Complaint.

5. Answering paragraph 5 of the Bill of Complaint, defendant admits that on October 26, 1916, the plaintiff, Samuel B. Smith, filed in the United States Patent Office the application upon which the patent in suit is based.

6. Answering paragraph 6 of the Bill of Complaint, the defendant is not informed, save by the Bill of Complaint, that the plaintiff, Samuel B. Smith, assigned the right, title and interest in the alleged invention and in and to the Letters Patent to be issued therefor or thereon to the plaintiff, The Buckeye Incubator Company, but admits that Letters Patent No. 1,262,860 issued on April 16, 1918 to The Buckeye Incubator Company, but, on information and believe, denies all other allegations of said paragraph.

7. The defendant is not informed, save by the Bill of Complaint, as to the allegations in paragraph 7 thereof, and, therefore, calls upon the plaintiffs for strict proof of these allegations.

8. The defendant is not informed, save from the Bill of Complaint, as to the allegation in paragraph 8 thereof, and, therefore, calls upon the plaintiffs for strict proof as to this allegation.

9. Answering paragraph 9 of the Bill of Complaint, the defendant denies, on information and belief, that the plaintiffs' incubator mentioned in said paragraph has proven to possess superior functions and qualities over other incubators, and the defendant is not informed, save from the Bill of Complaint, as to the other allegations of paragraph 9, and, therefore, calls upon the plaintiffs for strict proof of the same.

10. Answering paragraph 10, the defendant is not informed, save from the Bill of Complaint, that the incubators manufactured and sold by the plaintiffs have been marked "Patented" together with the date and number of the patent aforesaid as required by the Statutes of the United States, and, therefore, calls upon the plaintiffs for strict proof as to this allegation.

11. Further answering, the defendant denies, upon information and belief, each and every allegation of paragraph 11 of the Bill of Complaint.

12. The defendant, on information and belief, denies each and every allegation of paragraph 12 of the Bill of Complaint.

13. The defendant, further answering, denies, on information and belief, that the plaintiffs are entitled to any of the relief prayed for in sub-paragraphs 2, 3 and 4 of the prayer for relief of the Bill of Complaint.

14. Further answering the Bill of Complaint, the defendant, upon information and belief, avers that the

Smith patent in suit, No. 1,262,860, is invalid and void because the said Samuel B. Smith is not the original and first inventor of any material or substantial part of the thing patented, but that the same was patented and described in printed publications in this country before his alleged invention or discovery thereof, and more than two years prior to his application for patent therefor. The prior patents above referred to, and which are also pleaded as prior publications, are the following United States and foreign patents insofar as they have at present been ascertained:

UNITED STATES PATENTS

No.	Date	Name
3,019	March 30, 1843	N. E. Guerin
120,253	Oct. 24, 1871	H. Endemann
152,644	June 30, 1874	E. A. & C. W. Jones
272,744	Feb. 20, 1883	A. H. Morgan
240,004	April 12, 1881	P. H. Bate
286,756	Oct. 16, 1883	C. F. Winkler
297,676	April 29, 1884	G. Conant
320,463	June 23, 1885	L. Cutting
330,457	Nov. 17, 1885	C. Bassini & A. Heyden
344,474	June 29, 1886	J. W. Campbell
559,676	May 5, 1896	T. R. C. Christianson
591,870	Oct. 19, 1887	F. H. Morgan
410,110	Aug. 27, 1889	J. H. Knowles & J. K. Proctor
432,202	July 15, 1890	J. K. Proctor & J. H. Knowles
535,175	March 5, 1895	C. W. Schwartz, Jr.
553,723	Jan. 28, 1896	J. K. Proctor
11,460	Dec. 25, 1894	Re-Issue patent J. K. Proctor

691,837	Jan. 28, 1902	V. S. Bell
709,650	Sept. 23, 1902	O. P. Scott
725,079	April 14, 1903	G. C. Hawkins
745,458	Dec. 1, 1903	F. C. Perkins
828,181	Aug. 7, 1906	G. H. Boyd
798,697	Sept. 5, 1905	F. C. Perkins
886,325	April 28, 1908	E. F. Osborn
891,019	June 16, 1908	L. Verna
916,273	March 23, 1909	A. C. Coons
916,454	March 30, 1909	V. C. Koons
949,653	Feb. 15, 1910	J. H. Klinke
1,075,747	Oct. 14, 1912	C. W. Zimmer
1,100,146	June 16, 1914	J. O. Olson
1,137,752	May 4, 1915	G. E. Goldstein
1,160,793	Nov. 16, 1915	S. S. Van Keuron
1,165,958	Dec. 28, 1915	Thos. B. Freas
1,205,445	Nov. 21, 1916	R. F. Fullington

FOREIGN PATENTS

German	155,917	Nov. 7, 1901	E. Stulik
"	117,089	Feb. 4, 1901	Mann

15. The defendant, upon information and belief, avers that the Smith patent in suit is invalid and void because in view of the prior state of the art Smith's alleged discovery as described and claimed in said patent does not constitute a patentable invention.

16. Further answering, the defendant, upon information and belief, avers that by reason of the prior state of the art and the words of limitation of the claims of the Smith patent in suit and of the proceedings in the Patent Office, which resulted in the allowance of said claims, said claims are of such limited scope that they are not infringed by any structure which the defendant has made or used or sold.

17. And the defendant prays that the Bill of Complaint may be dismissed with costs allowed to the defendant and for such other and further relief as to the Court may seem just and proper.

W R Litzenberg
Solicitor and Counsel for Defendant

A. J. O'Brien
Of Counsel for Defendant

[Endorsed]: Received copy of the within Answer this 9th day of December 1929. Lyon & Lyon Henry S. Richmond for Plaintiff. Filed Dec 9 1929 R. S. Zimmerman, Clerk By Edmund L Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ORDER OF REFERENCE

This cause being at issue, and upon motion of counsel for plaintiffs that the same be referred to a Special Master to take and hear the evidence offered by the respective parties and to make his conclusions as to the facts in issue and recommend the judgment to be entered therein subject to full review by the court, and affidavits in support of such motion having been filed by plaintiffs and affidavits opposing such motion having been filed by the defendant, and such motion and such affidavits filed by both parties having been considered, and it appearing that because of the congestion of the court's calendar there are many other causes entitled to be first heard including a large number of criminal causes which are entitled to preference over civil matters as to the trial thereof; and it further appearing that because of the protracted length of patent trials the result has been and is that other civil litigants having causes to be tried have not been accorded a fair proportion of the time of the court; and it appearing that this condition will continue unless many of the patent cases including this cause now pending can be disposed of in the manner herein provided; and hence that in order to fairly and within a reasonable time dispose of the business before the court, it is necessary that this order be made;

IT IS NOW ORDERED that this cause be referred to DAVID B. HEAD, Esquire, Special Master, to take and hear the evidence offered by the respective parties and to make his conclusions as to the facts in issue and recommend the judgment to be entered thereon; the said Special Master DAVID B. HEAD is authorized and empowered to do all things and to make such orders as may be required to accomplish a full hearing on all matters of fact and law in issue in this cause, reserving to the court the full right and power to review and determine all questions of fact and law upon exceptions to the report of said Special Master by the respective parties as fully and completely had this reference not been made and as though this cause had been tried before the court; the objection of counsel for the defendant to the making of this order referring the cause to the Master is hereby noted and an exception is allowed in favor of the defendant.

IT IS FURTHER ORDERED that this cause be not set for hearing by the Special Master until the time for taking depositions by the respective parties is terminated under Equity Rule 47.

Dated this 15th day of January, 1930.

Paul J McCormick
District Judge.

[Endorsed]: Filed Jan 15 1930 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

REPORT OF SPECIAL MASTER

TO THE HONORABLE JUDGES OF THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION:

The undersigned, DAVID B. HEAD, appointed Special Master in the above entitled cause, pursuant to an order of this Court to take and hear evidence, to make conclusions as to the facts in issue, and recommend the judgment to be entered thereon, herewith submits his report:

The Action is in equity for infringement of Letters Patent No. 1,262,860, issued to the plaintiff, Samuel B. Smith, on April 16, 1918, for an incubator. The Buckeye Incubator Company has been joined as a party plaintiff by reason of a license under the patent. The nominal defendant is Herbert Waxham. J. L. Robbins, who has been doing business as the Robbins Incubator Company, of Edgewater, Colorado, the manufacturer of the structure alleged to infringe, appeared and defended the action.

Pursuant to the order of reference, the master set the matter down for the taking of testimony for March 25, 1930, at which time there appeared for the plaintiffs, Albert L. Ely, Esq., of Akron, Ohio, and Leonard Lyon, Esq., of Los Angeles, California; and for the defendant, A. J. O'Brien, Esq., Fred. Farrar, Esq., of Denver, Colorado, and W. R. Litzenberg, Esq., of Los Angeles, California. Testimony was taken from day to day and on March 31, 1930, both parties rested. By stipulation the

arguments of counsel were made by the filing of briefs, and the matter was taken under submission. During the taking of testimony an inspection was made of an installation of the plaintiffs' incubators at Van Nuys and Roscoe, California, and of a Robbins incubator near Gardena, California.

The plaintiffs have specified infringement of Claims 1 and 2 of the patent. The defendant has asserted the invalidity of the patent but relies mainly upon the defense of non-infringement, particularly urging a narrow construction of the claims in suit. These claims are directed to a process or method of artificially hatching eggs.

The Smith Patent, No. 1,262,860 was issued with specifications and claims for both a structure and a method. It is impossible arbitrarily to divorce and abstractly to consider a method or process apart from the structures used to carry it out. The structure of the patent in suit will first be considered, although the claims in issue are directed solely to the process.

The Art that is dealt with is that of artificially incubating and hatching the eggs of chickens and other fowls. Artificial incubation and hatching are very old and represent man's endeavor to imitate and even improve upon the biological function of the hen in the later stages of reproducing her kind. Chicken eggs ordinarily require twenty-one days for the process of incubation and hatching. The eggs should be kept at a temperature of not less than 100° and not more than 105° Fahrenheit. In the early stages of incubation the embryo begins using the white of the egg as food. The chemical reactions involved require oxygen and result in the giving off of

carbon dioxide. As the use of oxygen increases the heat produced by the reaction also increases. Plaintiffs' Exhibit 4 shows that there is a gradual increase until the eighteenth day. Around the eighteenth day the embryo begins to consume the yolk of the egg, which results in a marked increase in the chemical reaction referred to, accompanied by a corresponding increase in the heat produced. It is to be noted that during the first eighteen days it is necessary frequently to move the position of the egg on its axis to the extent of about ninety degrees. From the eighteenth to the twenty-first day this is not necessary.

From the physical facts it is evident that the problems involved in incubating and hatching eggs are:

(1) To provide means to raise the temperature of eggs in the earlier stages of incubation, and to provide means for reducing the temperature of eggs in the later stages of incubation, to the end that the eggs are kept at a temperature of not less than 100° or over 105°.

(2) To provide means for supplying oxygen to the eggs and for removing carbon dioxide from the air about them.

(3) To provide means for turning the eggs during the first eighteen days of incubation.

(4) To provide means for preventing too rapid evaporation of the moisture content of the egg, so that the embryo will not dry out too rapidly.

Without considering the prior patents in evidence and looking to the common usages of the art prior to the disclosure of the patent in suit (testimony of Taggart) it appears that artificial incubation was an old art. The problems heretofore outlined had been solved by providing

closed chambers with means for artificial heating, wherein the egg could be placed all on the same level and kept at a uniform temperature until hatched. Means were provided for turning the eggs. Due to the difficulties of temperature control that would have been encountered with larger quantities, not over five hundred eggs were placed in each enclosure or cabinet. The air surrounding the eggs was kept as still as possible, giving consideration to ventilation to remove air fouled with carbon dioxide and admit air carrying oxygen. The incubators of this period worked satisfactorily. However, it was apparent that economies would result from incubators in large units, wherein a large number of eggs could be hatched, with not a great deal more care and expense than in the smaller unit. As will appear in the consideration of the patented prior art, the idea of staged incubation was not new but its practical application had not been accomplished. Staged incubation may be defined as a process of incubation wherein eggs of different stages of incubation are placed in the same inclosure, and as eggs in the later stages are hatched, new eggs are put in, and this sequence is continued progressively and indefinitely.

Directing his endeavors to the perfection of staged incubation, the patentee, one of the plaintiffs herein, developed and disclosed the structure and method of the patent.

Referring to the patent, the structure there disclosed is in the form of a large chamber in which eggs are arranged in series or tiers of trays. A central compartment or corridor, 5, extends longitudinally through the chamber with a door at one end. On both sides of the corridor are the compartments 7 and 8. In these com-

partments are placed a large number of trays in which the eggs to be hatched are placed. Means are provided for tilting some of the trays from one side to the other. The compartments are divided from the corridor by curtains, 3 and 4, which extend almost to the floor. Electric fans, 18, are provided to force air downward to the floor of the corridor, 5, where it "mushrooms" and passes upward in the compartments, 7 and 8, through or around the trays to the space, 21, from which space it is again drawn into the fans and started on another cycle. Restricted openings, 28, permit a small amount of air to escape during circulation, which is replaced by air drawn in through openings over the fans. The limited interchange of air between the interior and exterior of the incubator together with the means provided for introducing moisture into the incubator serves to retain within the enclosure the greater percentage of the moisture given off by the eggs. This prevents the eggs from drying out too rapidly.

In operation trays of eggs are placed first in the upper stationary racks. As incubation progresses they are moved to lower tiltable racks and progressively downward until the eighteenth day, at which time they are placed in the stationary hatching racks at the bottom. As eggs are moved downward fresh eggs are placed in the top until the incubator is filled. Thereafter the process continues by the removal of the hatched chicks from the bottom, the moving of eggs downward and the placing of fresh eggs in the top, while in the central trays the eggs are moved through an arc of ninety degrees each day. The tilting of eggs is an old practice and we are not concerned with it in this case. It should be noted that the racks

are shown tilted at less than 45°, but it appears in actual practice the trays are tilted to that angle. As the air circulates, ventilation occurs through the openings previously referred to. The amount of air changed upon a single cycle is quite small as compared with the total volume of air, and is regulated to provide a volume of oxygen sufficient to satisfy the chemistry of incubation. The pipes, 23, are heated by steam or hot water, and they heat the air as it passes over them on returning to the fan. Moisture jets, 26, spray water into the circulating air to maintain the proper degree of humidity within the chamber. Both heat and moisture are capable of regulation.

This structure has been placed on the market by both the patentee and the other plaintiff and has gone into widespread use. Plaintiffs' Exhibit 15 shows the total gross business to have been in excess of $19,000,000.00.

The plaintiffs' commercial machine does not vary greatly from the patent except that all racks other than the lower hatching racks are tiltable, that the curtains do not extend below the bottoms of the lowest tilting racks, and that four fans are used instead of two. One of these machines was in evidence, plaintiffs' Exhibit 14. It has a capacity of 52,000 eggs. The master observed certain experiments with this machine and also with machines of the same type at the Hewitt Hatchery in Van Nuys. These experiments were concerned with the measurement of the direction and velocity of the air currents while the fans were in operation. Generally these experiments confirmed the showing of plaintiffs' Exhibit 5. This shows that the air circulates in definite cycles, leaving the fans with a speed of around 1200 linear feet per minute

and passing through the egg compartments at from 120 to 40 feet per minute. The fans have a total capacity of 6,000 feet per minute. The purpose of circulating the air in definite currents is to obtain a uniform temperature throughout the whole body of eggs. As pointed out before, eggs in the earlier stages of incubation must be furnished with heat and those in the later stages must be cooled by removing units of heat from them. The air circulating at considerable velocity accomplishes this by removing heat from the old eggs and transferring it to the new eggs. The patentee states:

"It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation."

Claims 1, 2, and 3 are directed to the method described, while Claims 4 and 5 are directed to the structure.

Claims 1 and 2 are in issue and read as follows:

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the

escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

"2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse, and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

The Prior Art in evidence consists of a large number of United States and foreign patents. The patent in suit has been held valid in a number of cases. As defendant's counsel points out, the validity of the patent has not been adjudicated in this district or circuit. However, there is no question but that the patent is valid, although its scope has never received complete definition.

The prior patented art may be divided into two groups: (1) Incubators and (2) ventilating devices. Those in the second group have been offered as being in an an-

alogous art. The principal reference in this group is Proctor, U. S. Patent No. 553,723, defendant's Exhibit A-15. This patent, which calls for the forced circulation of air in a closed chamber for the ordering of tobacco, appeared in 1896, and until the disclosure of the patent in suit the practice of the incubator art was to keep the air as still as possible inside the chamber where the eggs were placed. This, in itself, negatives any theory of analogy between the arts. In ordering tobacco the tobacco is placed in a chamber and air is circulated to bring the tobacco to a proper moisture content. In the Smith incubator eggs in various stages of incubation, having different heat and moisture requirements, must be kept at the proper temperature, in the proper air, with a certain moisture content. There is no analogy.

Among the patents for incubators, the German patent to Stulik (1904) defendant's Exhibit A-36, is the most pertinent. This patent discloses an incubator with a chamber in which eggs are placed in different stages of incubation. Air is drawn in from the bottom and passes by convection from new eggs to old eggs and thence out through openings in the top. Here is found staged incubation but without a forced circulation of air, or the recirculation of air. The patent claims include only one element found in Stulik, i. e., the arrangement of eggs in different stages of incubation in a closed chamber. Stulik is not an anticipation and this reference only goes to show that it did not occur to this worker in the art to apply a forced circulation of air to eggs in different stages of incubation.

The same may be said of Zimmer, defendant's Exhibit A-29, and of the ingenious machine of Winkler, Exhibit

A-6. Although all of these patents are old they do not appear to have been adopted by the art.

From a consideration of the patent and the prior art references, it is concluded that the novelty disclosed in the patent in suit is in the circulation of air by forced draft throughout a closed chamber in which eggs in different stages of incubation are placed. The idea of putting the eggs in different stages of incubation in the same chamber was old (Stulik) as was the provision for proper ventilation which is common to all incubators. In the patent in suit we find a radical departure from the common practice, i. e., Smith uses a forced circulation of air, where in the prior art the air was kept as still as possible, going no farther than the convection currents of Stulik.

Upon the scope of the claims defendant has argued that the file wrapper and contents of the Smith application impose specific limitations. The contention is that this limitation goes to the extent of limiting Smith to an arrangement whereby the currents of air coming from the fan must first be passed over the egg in the last stages of incubation and thence over the other eggs, so that the progression is such that the newest eggs are the last to be reached by the circulating air. This must be upon a theory that the transference of heat from old to new eggs must be accomplished in one cycle. This limitation is not expressed in either of the claims, in that the claims go no further than to say that the eggs must be arranged "at different levels" and the air impelled with sufficient velocity "to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature", whereby "the units of heat will be carried from the eggs

in the more advanced stages of incubation to those in a less advanced stage".

In examining the file wrapper it is found that the Smith application passed through the usual interchange of ideas and comments between the examiner and solicitor. Claims were offered and rejected. By the paper "E", the claims in suit were added and allowed without comment from the examiner. Although arguments were offered prior to that time which pointed out the specific arrangement of old and new eggs in the Smith structure and this point was before the examiner, no limitation to this specific arrangement was required as to Claims 1 and 2. Having this in mind and having previously taken note of the patented prior art, if the examiner had felt that some limitation should have been imposed he surely would have answered the amendment "E". From this it is logical to assume that the examiner had reached by that time a full understanding of the disclosure and could find no reason to require such limitation. The master is unable to find that the file wrapper and contents place any limitation upon the claims beyond a fair construction of their language viewed in the light of the prior art and the disclosure of the patent. There appears to be nothing in the prior art to limit the claims to an arrangement of eggs progressively as to age from bottom to top when subjected to a forced air current. The prior art shows such an arrangement but not in combination with a forced draft.

As to the file wrapper, the case of Fullerton Walnut Growers' Assn. vs. Barnsgrover Manufacturing Co. (9th C. C. A.) 166 Fed. 433, clearly states the rule,

"In the light of these authorities, it is clear that the claims of the patent, unambiguous as they are, are to be

interpreted according to the meaning of their own terms, and are not to be controlled or limited by any argument or representation made in the patent office by the applicant's attorney as to the scope of the invention or the features wherein it differs from the prior art."

A method or process claim cannot be limited to the use of a specific structure to carry it out. Carnegie Steel Co. vs. Cambria Iron Co., 185 U. S. 403. It is particularly to be noted that the claims in suit are method or process claims, and that the novelty rests in the application by a forced draft of a current of air to eggs in various stages of incubation arranged at different levels in closed chambers.

It is proper to consider here the actual physical phenomena as shown in the Smith incubator in practice. The velocity of the air as impelled by the fans is found to be quite rapid. It is so rapid that a particle of air in a single cycle is not apt to come in contact with but a small number of the eggs in the incubating compartments. For this reason, it is not material to the process that in any one cycle one particle of air should come successively in contact with eggs in each stage of incubation. From the very nature of the process this is impossible in the Smith machine in view of the velocity of the air. However, it is essential that the air be circulated with such velocity that particles of air move around all of the eggs and that the air is so mixed and diffused that heat units are transferred through the mass, so as to maintain a uniform temperature. A uniform temperature is not maintained by a single unit taking heat from an old egg and transferring it to a new egg, but by the whole mass being circulated, mixed

and diffused so rapidly that no part of the chamber can reach a temperature materially at variance with the remainder of the chamber. During the process heat is transferred by the medium of the air from the older hot eggs to the newer cold eggs. If we disregard the small amount of air that is constantly changing through the restricted openings, the air is circulated in closed cycles, and the order in which the eggs are arranged does not seem to affect the process, so long as the eggs are arranged at different levels so that the circulating air may reach all of them.

By including in Claim 2 reference to the application of air from one chamber to another, in contrast with the omission of such a reference in Claim 1, shows upon the face of the patent an intention to limit Claim 2 to a process carried out in a machine with a separate chamber or corridor in which the air currents are generated, and it also shows a clear intention not to so limit Claim 1.

Prior Decisions. The patent in suit has been the subject matter of extensive litigation. Several prior decisions have been urged as definitely settling certain questions raised as to the scope of the claims in suit. The same decisions in some cases are relied upon by each party insofar as they sustain their contentions. All of these decisions are in agreement in holding the patent valid. It is difficult to determine the state of facts before the various courts. In the Sixth Circuit the latest decision casts doubt upon and removes the authority of a prior decision announcing a limitation. The cases of The Buckeye Incubator Company vs. Wolfe (D. C.) 291 Fed. 253,

affirmed (6th C. C. A.) 296 Fed. 680; The Buckeye Incubator Company vs. Cooley (D. C.) unreported affirmed (3rd C. C. A.) 17 Fed. (2nd) 253; The Buckeye Incubator Company vs. Stone (D. C.) unreported—all hold the patent valid and infringed without going into any questions as to the scope of Claims 1 and 2. Buckeye vs. Miller (D. C.) affirmed ..... Fed. (2nd) ..... turns upon an issue that is not here in point. The following cases pass upon the scope of the patent: Buckeye vs. Blum (D. C. 17 Fed. (2nd) 456; same case (6th C. C. A.) 27 Fed. (2nd) 333; Buckeye vs. Petersime, District Court decisions unreported (6th C. C. A.) 19 Fed. (2nd) 721; Buckeye vs. Hillpot (D. C.) 22 Fed. (2nd) 855; 3rd C. C. A.) 24 Fed. (2nd) 341; Boling vs. Buckeye (D. C.) 33 Fed. (2nd) 347.

The cases in this group principally are concerned with two questions:

(1) Is the patent limited to a particular character of air movement—i. e., circulation in definite channels as distinguished from agitation or churning?

(2) Must the circularing air be first propelled over the eggs in the later stages of incubation and thence to eggs in less advanced stages?

Upon the first proposition the decisions in the Blum, Petersime, and Hillpot cases are substantially in agreement. In the Blum case the District Court found that the air was agitated by paddle-wheels which gave the air no particular direction but had a churning and stirring effect. No fan-impelled currents were involved. Upon this finding a conclusion of non-infringement was reached, which was affirmed in the Circuit Court of Appeals for the Sixth Circuit. In the Petersime case the District

Court found that a reel around the egg trays stirred but did not drive the air. There was no fan in the machine. This decision discussed all of the claims together, referring to the patent as a combination patent, and decides that the defendants did not infringe on one or the other two grounds, one of which apparently was based upon a conclusion that all of the elements of the patented combination were not used by the defendant. Claims 1 and 2 were in issue, and it follows that the court was passing upon these claims. The decision was affirmed by the Circuit Court of Appeals for the Sixth Circuit.

The Hillpot case differs somewhat in the state of facts from the two cases mentioned above, in that the defendant's structure showed the use of fans. However, the Circuit Court of Appeals found that although the air left the fans in a definite current, the current did not persist but instead broke up and the air wandered where it pleased. Upon this finding the judgment of the District Court holding the patent not infringed was affirmed. It follows that both the Third and Sixth Circuits are in agreement that the process of Claims 1 and 2 is limited to the use of definitely impelled currents of air as distinguished from the churning, mixing, or agitating effect of paddles or reels or of indefinable currents from fans. Upon the second proposition there is confusion in the Sixth Circuit and posisble conflict between the Sixth and the Third Circuits. In the Hillpot case the District Court held that Smith had limited his claims to "the passing of the air currents from the eggs in the more advanced stages of incubation to those in less advanced stages of incubation". It is evident that by his reference to the Petersime case in this connection

the court intended to limit this to one cycle—i. e., that the air leaving the fans must pass first over the oldest eggs. While affirming the decision upon the findings discussed under the first proposition, the Circuit Court of Appeals differed from the conclusions of the District Court. The Circuit Court said (p. 344):

"But when, as in Smith, the air moves in cycles through corridor and tiers it makes no difference after the first cycle which way it moves through the egg trays, whether from bottom to top or from top to bottom, or whether it first strikes warm eggs or first strikes cool eggs, for in every cycle after the first current when passing warm eggs will gather up their heat units and carry them to the cool eggs precisely as claimed and will in the same way produce that uniformity of temperature which is the thing sought by the art and achieved by the invention."

It is clear that the court found no limitation as to sequence in which the air from the fans passes over the eggs.

In the Petersime case, as before noted, the District Court found that there were no definite currents of air in the defendant's machine. In reviewing this case the Circuit Court of Appeals for the Sixth Circuit expressed the opinion that the Smith process required the air to be first passed over the older eggs. Later the same court, in passing upon the Blum case and affirming it upon the finding of an absence of definite currents, states (p. 333):

"Counsel now point out, with much force, that in a case where the air does not come in from the outside in large volume, and that in any case during the circuits

after the first one, no one point in the circuit gets the air ahead of any other point, in an absolute way. Which point gets it first depends upon where we consider the circuit to begin. We think we need not consider the effect of this defect in the reasoning—if it is a defect—of our former opinion".

It is reasonable to construe this language as indicating that the question is as yet undecided in the Sixth Circuit. If the expression of the court in the Petersime case is to stand there is a conflict between the Third and the Sixth Circuits upon this proposition. The master's opinion and his finding is that there is no limitation which requires that the process claimed in Claims 1 and 2 be carried out by first passing the air currents over eggs in the later stages of incubation.

The decision in the case of Boling vs. Buckeye (supra) in the Southern District of Ohio, wherein a reversal of the air currents is held to avoid infringement, must be recognized as irreconcilable with the conclusions herein reached.

To observe one of the plaintiffs' incubators in operation, wherein 52,000 eggs are in process of incubation at one time, and compare it with the small incubators of the prior art, leads to the conclusion that Smith's disclosure was an important departure, revolutionizing the practice of an old art. It has all the earmarks of a meritorious invention and must be so credited.

The Defendant's Structure. It was stipulated that the defendant Waxham has used a machine manufactured by J. L. Robbins and known as the Robbins incubator, Model 23. One of these machines is in evidence as plaintiffs' Exhibit 13. Exhibit 9 consists of four photographs of

Exhibit 13. Plaintiffs' Exhibit 8 is the catalogue giving the manufacturers' description of the machine. It is constructed in the form of a single large compartment or chamber with doors in front. On the left hand side are racks holding a tier of trays. In the right and central portions of the chamber a number of racks holding egg trays are mounted on an axle. The racks are so constructed that trays are arranged at different levels from top to bottom. A crank on the outside of the machine is provided to turn the axle and move the racks and trays forward 45° or rearward 45°. This turns the eggs. Upon the rear wall of the chamber are mounted two large fans. These turn upon axles extending through to the back of the wall where pulleys and belts connect them to an electric motor. Vents are provided in the top and back to permit the escape of foul air and the intake of fresh air to such an extent as to provide the incubating eggs with oxygen and remove carbon dioxide. Electric heaters and water pans are placed near the floor at the rear of the chamber. The heaters are thermostatically controlled, while the moisture is regulated by varying the amount of fresh air taken into the chamber. Fresh eggs are placed in trays and put in the racks of the tilting section on the right. No particular order is followed, except that the user is advised not to place trays of eggs in the same stage of incubation close together. The trays once placed are not moved until the eighteenth day. At that time the eggs are placed in deeper trays and moved to the stationary or so-called hatching racks on the left. Here they are left until the chicks are hatched. As the oldest eggs are moved out of the tilting racks, fresh eggs are put in their places so that eggs,

in various stages of incubation are always in the racks at different levels. The two fans at the rear are operated at a speed of around 220 revolutions per minute. Being of large size they practically cover the wall of the chamber, and due to their close proximity to the wall act to drive the air centrifugally toward the sides, top, and bottom of the chamber and to draw the air inward at their center.

Due to the interpretation that Claims 1 and 2 of the patent have received definite findings upon the exact nature of the movement of air within the chamber are necessary to determine if there is identity or equivalency between the method of Robbins and the method of Smith. The evidence on this point has been greatly clarified by the substantial agreement of the experts for both parties (Taggart and Dougherty). The plaintiffs' proof is in agreement with representations made by Robbins in the case of Petersime vs. Robbins, in the District of Colorado (plaintiffs' Exhibit 17). The master observed experiments on the Robbins machine in evidence and upon a similar machine in actual use at the Goddard Hatchery near Gardena. The air in the Robbins machine is driven outwardly from the sides of the fans and forwardly along the walls of the chamber at a speed of around 900 feet per minute. The air strikes the front wall of the chamber and turns inwardly at about 250 feet per minute. It passes through and around the trays on returning to the fans at speeds varying from 40 to 350 feet per minute, increasing as it nears the vortex of the fans to as high as 600 feet per minute. Anemometer tests in machines both empty and filled with eggs showed that the air was moving in definite paths throughout the whole mass of

eggs with perhaps one exception along the left edge of the stationary trays where the outgoing and incoming air forms eddies for the space extending two or three inches across. This space is a very small part of the whole. The testimony of Taggart, based upon observation made in an empty machine, and illustrated by Exhibits 10, 11, and 12, is subject to the correction of Daugherty's Exhibits D and E, which illustrate his measurement in a machine filled with eggs. The currents, as demonstrated in a machine at Goddard's Hatchery, move in the manner illustrated by Taggart, except that there is a very definite increase of velocity and volume of air passing through the space between the hatching trays and tilting trays (line X-Y in Exhibits D and E). This current is such that little of the air driven forward at the left wall of the machine passes over the tilting trays on its return to the fan. The air upon returning to the fans is again thrown out so that in the continuing cycles at the velocity maintained all of the air within the chamber is thoroughly circulated and diffused, so that a part of the air passing along the left wall on one cycle will be thrown out in some other direction and in another current on the next cycle. Practically all of the air in the machine is moving in definite measurable currents at all times. The capacity of the fans is approximately 12,000 cubic feet per minute. The temperature of the eggs is maintained within the limits necessary to successful incubation. It follows that this is done by transferring heat units from the older eggs to the newer eggs through the medium of the circulating air.

Infringement. The defendant's contentions upon the issue of infringement are several. It seems unnecessary

to consider differences in structure unless those differences are such as to result in a difference in the process they carry out. Upon the point raised as to the lack of partitions in the Robbins machine, to direct the air currents in the manner of the curtains 3 and 4 in the Smith machine, it is a question as to whether or not the lack of such directing means causes the machine to function other than to

". . . . . apply a current of air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage."

The question is answered as by the findings made as to the currents in the Robbins incubator as compared with the currents in the Smith machine. It was found that there was no substantial difference in the velocity of the currents and that in both machines there were definite currents passing through and around eggs, with the effect of keeping them at a uniform temperature. Over the eggs in the tilting trays the lowest velocities were in the neighborhood of 40 feet per minute. The absence of curtains or partitions in the Robbins machine is compensated by increased fan capacity. The two fans of Robbins have a capacity of approximately 12,000 cubic feet compared with a capacity of the four in Smith of 6,000 cubic feet per minute. It is evident that by omitting positive directing means such as partitions Robbins has impaired the efficiency of his machine in using greater

fan capacity to obtain the same velocities. That a process or structure is less efficiently applied than a patent specifies is no defense to a charge of infringement,—King Ax Co. v. Hubbard, 97 Fed. 720; Elyria Iron & Steel Co. vs. Mohegan Tube Co., 17 Fed. (2nd) 827; Standard Brands vs. Federal Yeast Corpn., 38 Fed. (2nd) 329—or that the process is carried out by an apparatus or mode differing from that specified in the patent—Tilgham vs. Proctor, 103 U. S. 707.

There appears to be no difference in the method of applying currents in the Robbins machine and that specified in the patent. The same object is in view and the results are the same, i. e., the eggs are held at a uniform temperature. The practical result of permitting incubators to be built in units of large egg capacity is attained by Smith with a 52,000 egg capacity and Robbins with a 23,000 egg capacity.

The contention that infringement is avoided because the air currents in the Robbins machine, upon leaving the fans, do not first pass over the oldest eggs is determined by the previous consideration given the subject under the discussion of the scope of the patent. To find infringement it is only necessary to find that eggs in more than one stage of incubation, arranged at more than one level in a closed chamber with restricted openings, are subjected to the air currents previously discussed and defined. That the hatching eggs (eggs after the eighteenth day) are placed in separate trays not in the same tiers with other eggs, does not affect the question as long as eggs in different stages are placed at different levels in the chamber. This is done in the tilting racks.

The openings at the top and back of the Robbins machine are of such a capacity and are so used that they provide—

> "for the escape of foul air without undue loss of moisture".

There has been no contention raised to the contrary.

From the above it is concluded that the defendant in the use of the Robbins incubator has infringed Claim 1 of the patent in suit.

As previously pointed out, the inclusion in Claim 2 of the language, "a power driven current of heated air in an adjacent chamber", and the failure to include such language in Claim 1, shows a clear intention to limit the claim to a process carried out in a machine with at least two distinct chambers. The Robbins machine has but a single chamber and it would be illogical to recognize a theoretical division of that chamber in view of the language of the claim. Because the Robbins machine does not drive the air from a separate chamber to the egg compartment, Claim 2 is not infringed.

Wherefore, the master finds:

1. That this is an action in equity arising under the patent laws of the United States and falling within the jurisdiction of this court;

2. That title to Letters Patent No. 1,262,860 is vested in the plaintiff, Samuel B. Smith, and that the plaintiff, The Buckeye Incubator Company, holds an exclusive

license to manufacture, within certain limits, under the said Letters Patent;

3. That the said Letters Patent and, particularly, Claims 1 and 2 thereof, are good and valid in law;

4. That Claim 1 of said Letters Patent has been infringed by the defendant;

5. That Claim 2 of said Letters Patent has not been infringed by the defendant.

It is recommended that a decree be entered in conformity with this report, that an accounting of profits and damages be had, that an injunction issue against the defendant enjoining those acts herein found to infringe the patent in suit.

This report was prepared in a drafted form and submitted to counsel to permit the filing of exception and suggestions for correction. Both parties offered certain suggestions, which, in the main, have been adopted. The plaintiffs excepted to the ruling on Claim 2. This exception is denied.

Returned herewith is the file in the case together with the transcript of testimony, exhibits, and other papers relating to the proceedings on reference.

Respectfully submitted,

David B. Head.

David B. Head

Special Master

[Endorsed]: Filed Aug. 1-1930 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

August 1st, 1930

RE: Smith vs. Waxham, #Q-69-M, In Equity.
Q 69-M

Messrs. Lyon & Lyon
Attorneys-at-Law,
National City Bank Building,
Los Angeles, California.
A. J. O'Brien, Esq.,
610 Interstate Trust Building,
Denver, Colorado.

Dear Sirs:

Enclosed herewith is a copy of the Report of Special Master in the above entitled case, which is filed this day with the Clerk of the United States District Court.

Very truly yours,

.....

David B. Head
Special Master

DBH:HF
Encl

[Endorsed]: Filed Aug. 1-1930 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

EXCEPTIONS ON BEHALF OF THE PLAINTIFFS TO REPORT OF SPECIAL MASTER

Now come the plaintiffs, Samuel B. Smith and The Buckeye Incubator Company, and file herewith the following exceptions to the report of the Special Master in the above entitled case:

1. That the Master erred in finding that the Defendant had not infringed claim 2 of the patent in suit.

2. That the Master erred in failing to find that the Defendant did in fact infringe claim 2 of the patent in suit.

Respectfully,

A. L. Ely
Leonard S. Lyon
Attorneys for Plaintiffs.

[Endorsed]: Due Service and receipt of a Copy of the within exceptions is hereby admitted this 15 day of Aug, 1930 A. J. O'Brien W. R. Litzenberg Atty. for plaintiffs Filed Aug 15 1930 R. S. Zimmerman, Clerk By M. L. Gaines Deputy Clerk

[TITLE OF COURT AND CAUSE.]

EXCEPTIONS TO REPORT OF SPECIAL MASTER

Comes now the defendant in the above entitled cause and files the following exceptions to the report of the Special Master filed herein on the 1st day of August, 1930, for the reasons stated herein:—

EXCEPTION 1.

The Master found (see page 5 of his report) that: "in the consideration of the patented prior art, the idea of staged incubation had not been accomplished."

Said finding is not supported or warranted by the evidence; and the Master should have found that the patents of the prior art fully disclose and teach staged incubation as a practical proposition. In this connection, attention is called to the German patent to Stulik, defendant's Exhibit A-36; the patent to Zimmer, defendant's Exhibit A-29; the patent to Winkler, defendant's Exhibit A-6; and the patent to Fullington, defendant's Exhibit A-34. All these patents fully disclose staged incubation as well understood and practicable, and Fullington alone discloses staged incubation with forced draft. This Fullington patent is ignored by the Master in his report. At least, it is not specifically mentioned. The following is quoted from the Fullington specification at page 1:

"This invention relates to incubators * * * and has particular reference to an attachment for that type of devices which may be depended upon to automatically

regulate the temperature at which the * * * incubator is to be kept.

More specifically, it is an object of this invention to provide means * * * for removing heated air from the interior of the incubator * * * so that overheating of the incubator is prevented.

A further object is to adapt the means previously set forth to prevent the under cooling of the incubator and to further provide means so simple in their construction and so capable of being cheaply manufactured that costly thermometers or thermostats may be dispensed with and yet their necessary operations performed in an equally efficient manner."

The specification further explains how foul air is caused to escape from the incubator through the pipe 17, while the forced draft is in operation in the incubating chamber, provision being made to regulate the operation of the fan automatically, and to cooperate with the heating element whereby the proper temperature is at all times maintained.

This Fullington patent either alone, or in combination with Stulik, Winkler, or Zimmer, discloses every feature of Claim 1 of the Smith patent in suit, particularly if an attempt is made to give this claim an interpretation broad enough to cover the defendant's process as practiced in the Robbins incubator.

EXCEPTION 2.

The Master found (see page 5 of his report) and referring to Smith's activities as follows:

"Directing his endeavors to the perfection of staged incubation, the patentee, one of the plaintiffs herein, de-

veloped and disclosed the structure and method of the patent."

Whereas, the fact is that Smith actually adopted the Fullington process of forced draft and staged incubation.

EXCEPTION 3.

The Master found (see page 9 of his report), after referring briefly to prior art patents, that there was no question that the Smith patent in suit is valid.

Whereas, the fact is that in view of the prior art patents, the patent in suit is void.

These prior patents, particularly Guerin, defendant's Exhibit A-1; Winkler, defendant's Exhibit A-6; Zimmer, defendant's Exhibit A-9; Stulik, defendant's Exhibit A-36; and Fullington, defendant's Exhibit A-34, teach everything found in the Smith patent in suit, if an attempt is made to place an interpretation upon Claim 1 of the Smith patent broad enough to cover the defendant's process, or that carried out in the operation of the Robbins incubator. The Fullington patent alone, defendant's Exhibit A-34, shows all the features of the Smith patent in suit. And the other patents noted all show staged incubation, with any one of which, the Fullington structure when considered as an attachment, might be connected so as to produce a forced draft process with staged incubation and means for removing foul air through restricted openings.

Further, the patent to Proctor, defendant's Exhibit A-15, shows the forced draft and the air circulation of Smith in every detail.

EXCEPTION 4.

The Master found (see page 10 of his report), and referring to the patent art, that

"until the disclosure of the patent in suit, the practice of the incubator art was to keep the air as still as possible inside the chamber where the eggs were placed."

Whereas, the fact is that the Fullington patent, defendant's Exhibit A-34, discloses forced draft in an incubator for maintaining uniform temperature, with provision for removing foul air, with eggs arranged in tiers, thus teaching every vital feature of the Smith patent in suit.

EXCEPTION 5.

The Master found (see page 10 of his report) that there was no analogy between the ventilating and incubating arts, basing his finding upon the proposition that until the Smith disclosure, the practice in the incubator art was to keep the air as still as possible inside the chamber.

All of which is disproved by the disclosure in the Fullington patent as heretofore noted. This finding of the Master is based on a false premise, and is therefore erroneous.

EXCEPTION 6.

The Master (see pages 10 and 11 of his report), made the following finding:

"From a consideration of the patent and the prior art reference, it is concluded that the novelty disclosed in the patent in suit is in the circulation of air by forced

draft throughout a closed chamber in which eggs in different stages of incubation are placed. * * * In the patent in suit we find a radical departure from the common practice, i. e., Smith uses forced circulation where in the prior art the air when kept as still as possible, going no further than the convection currents of Stulik."

Whereas, the fact is that in the Fullington patent, defendant's Exhibit A-34, the primary idea is the circulation of air by forced draft in an incubator. The following is quoted from the Fullington specification, page 1:

"The interior of the casing 5 is adapted to be filled with rows or tiers of egg trays which may be of the usual construction positioned in the customary manner."

The customary manner is shown in the Zimmer patent, defendant's Exhibit A-29, the Stulik patent, defendant's Exhibit A-36, and other patents, all of which show staged incubation which the Master admits was very old.

Again, we note from the Fullington specification, page 1:

"A pair of circulating pipes 17 and 18 are longitudinally positioned * * *. Through one of these pipes 17 warm foul air passes from the incubator * * *. A branch pipe 20 extends from the turn of the pipe 17 and passes through the wall of the fan chamber 9, opens into the air without and thus provides means whereby fresh air enters the fan when the latter is running, said air being forced through the pipe 18 into the incubator."

Again, on page 2 of the Fullington specification, we find the statement that air is forced into the casing through the pipe 18, and the foul air driven out through the pipe 17.

Again, in Claim 2 we find mention of

"fan means for circulating air through said inlet and outlet pipes;"

and in Claim 3,

"a fan for circulating air through both of said pipes simultaneously."

Here is the full disclosure in the prior patent art of the Master's finding as to Smith's activities, and conclusive proof that the said finding is erroneous.

EXCEPTION 7.

The Master found (see page 13 of his report):

"There appears to be nothing in the prior art to limit the claims to an arrangement of eggs progressively as to age from bottom to top when subjected to a forced air current. The prior art shows such an arrangement but not in combination with a forced draft."

Whereas, the fact is, as heretofore pointed out that the Fullington patent, defendant's Exhibit A-34, fully discloses the forced draft feature in an incubator filled with tiers of egg trays which may be of normal construction, and positioned in the customary manner. Both the Zimmer patent, defendant's Exhibit A-29, and Stulik, defendant's Exhibit A-36, were prior to Fullington, and both had staged incubation, as admitted by the Master.

Zimmer has the progressive arrangement of the eggs as to age from bottom to top and Stulik from top to bottom. Either, or both of these arrangements may be considered as included in Fullington's statement that the

"tiers of egg trays may be positioned in the customary manner".

Hence, Fullington disclosed everything embraced in the statement of the Master, namely,

"The combination of forced draft and the progressive arrangement of eggs as to age."

EXCEPTION 8.

The Master found (see page 14 of his report) that:

"The order in which the eggs are arranged does not seem to effect the process so long as the eggs are arranged at different levels so that the circulating air may reach all of them."

If the Master means by this finding that the Smith claim is not limited to the order in which the eggs are arranged when the air is brought into contact therewith, this finding is erroneous since otherwise the claim is void in view of the prior art as heretofore noted in these exceptions, special reference being made to Fullington, defendant's Exhibit A-34; Zimmer, defendant's Exhibit A-29, Stulik, defendant's Exhibit A-36; and Guerin, defendant's Exhibit A-1.

EXCEPTION 9.

The Master erred in his consideration of the prior art (see page 9 of his report) in his attempted construction of the claims of the patent in suit and in his statement (in referring to the patent) that:

"its scope has never received complete definition".

In this connection the Master entirely disregards the disclosure of the prior art such as the patent to Fullington No. 1,205,445, issued November 21, 1916, on application filed September 18, 1914, which patent contains a

clear and complete disclosure of circulation of air by forced draft through a closed chamber in which eggs in different stages of incubation are placed.

When the Master said:

"The master is unable to find that the file wrapper and contents placed any limitation upon the claims beyond a fair construction of their language viewed in the light of the prior art and the disclosures of the patent,"

he failed entirely to give due weight to and make proper application of prior decisions of other United States Courts, including Circuit Courts of Appeals and District Courts. In these prior decisions the claims of the Smith patent here in suit have been so definitely, finally and clearly limited and construed as to make a finding of non-infringement in this case imperative. The limitations placed on the Smith patent by these prior decisions are substantially as follows:

Buckeye Incubator Co. vs. Wolf, 291 Fed. 253. In this case Judge Westenhaver of the District Court for the Northern District of Ohio, said:

"The principle of operation and the hatching method for which this apparatus is designed consist in forcing mechanically a draft of heated air downwardly through the central corridor, where it passes below the bottom of the partition or curtains and ascends through the column of egg trays to the exit at the top of the respective egg chambers. * * * A cycle of forced circulation of air through definite channels, it is said, is thereby obtained."

Wolf vs. Buckeye Incubator Co., 296 Fed. 680. In this case the Court of Appeals affirmed the District Court

adopting the reasons stated by the District Court, hence giving sanction to the limitation read into the claims of the Smith patent by Judge Westenhaver.

Buckeye Incubator Co. vs. Cooley, 17 Fed. (2d) 453. In this case the Court of Appeals for the Third Circuit referred to the Wolf cases and said of the Smith patent:

"It is not a great invention".

Buckeye Incubator Co. vs. Blum, 17 Fed. (2d) 456. Judge Westenhaver of the United States District Court of the Northern District of Ohio, in this case again had the Smith patent before him. He reviewed all the prior cases, including the Wolf cases in both the District Court and the Court of Appeals for the Sixth Circuit and the Cooley case in the Court of Appeals for the Third Circuit. Of this litigation and his previous decisions he said:

"Since then this patent has been involved in no less than twenty-five law suits, of which some fourteen were settled before hearing, and in five decrees for the plaintiff were rendered. In two, noninfringement was found."

In this decision Judge Westenhaver very fully points out the limitations in the Smith patent. He discusses the limitations over and over again and in speaking of the claims first presented by Smith by his application in the patent office, he says:

"These claims were all rejected by the Examiner, either because they were anticipated by the prior art or because they covered more than Smith had actually discovered or invented. He acquiesced in that rejection and accepted narrower claims.

Smith is not now entitled to have a construction which covers merely eggs in different stages of incubation in one chamber, with heated air applied to or forced about them. He made an effort to get claims broad enough to admit of this construction, and failed. He acquiesced in that rejection and accepted claims which called for the application of a current of air. This expression, whether we consider merely its normal meaning, or whether we determine its meaning from the disclosures of the specifications, or whether we determine the same from these rejected patent office rejections, must be held limited to a method which calls for the creation and driving by force of a current of air in some more or less definite or predetermined direction through a column of eggs arranged in an order which presents first to the current those in the most advanced stage."

Judge Westenhaver held that the defendant there was not guilty of infringement, saying in conclusion:

"Even if Smith's invention is one of great merit, and his patent claims entitled to a liberal range of equivalents, it is not permissible to give those claims a construction broad enough to include a method which does not use or apply his current of air."

Judge Westenhaver's decision in the above case is affirmed by the Court of Appeals for the Sixth Circuit in Buckeye Incubator Co. vs. Blum, 27 Fed. (2d) 333, where that court said:

"The result in that case rests also upon the theory that the patent contemplates a distinct, or at least an identifiable, current of air, flowing like a stream in one direction. Upon reconsideration, we are satisfied that this

theory is correct. Whether there is such a fairly distinct current, as distinguished from the general agitation employed by the defendant in the Petersime Case, is said to be of no practical importance in achieving the successful result. Perhaps so; and yet dependence upon that theory, in order to sustain the patent, is required, both by the proceedings in the patent office and by the prior art, including Smith's too old public use. Smith learned or knew he must differentiate in this respect in order to get his patent."

Buckeye Incubator Co. vs. Petersime, 19 Fed. (2d) 721. Here the Court of Appeals affirmed a decree of the District Court for the Western Division of the Southern District of Ohio (Judge Hickenlooper), finding for the defendant on the ground of noninfringement of this same Smith patent. This opinion very clearly establishes the limitations of the Smith claims. The Court there said:

"Looking to the language of the claims, as indeed to the device that Smith uses, it would seem that he had in mind a process by which the warm air taken into the corridor would be currently directed, so as to strike first the eggs in the more advanced incubation, take to them the additional needed oxygen, and carry the heat units therefrom to other parts of the two compartments, thus effecting, in part, at least, a uniformity of temperature throughout the egg chambers. This interpretation, we think, is borne out by the specifications. They refer to a 'forced circulation of hot air,' to subjecting the eggs to a 'column of air,' to moving the eggs to a different position 'with reference to the forced circulation of hot air,' to forcing the air 'to pass between the different eggs'

which will in effect 'act as a cooling medium' for the more advanced eggs, all of which contemplate a defined current of air by which certain eggs may be cooled and given the additionally needed oxygen, and others may be warmed by the heat units which the current carries from the more advanced eggs. The file wrapper history of Smith's patent tends to support the same conclusion. This conception of a current of air driven in a definite or predetermined direction is different, we think, from the Petersime process, by which diffusion of heat units and uniformity of temperature is obtained by the slow stirring or agitation of the air in the egg chamber."

Again of the Petersime process the court said:

"The air in the drum is agitated by a slow-moving stirrer, but there is no defined current created by the agitation, that drives the air first upon the eggs in the more advanced stage of incubation, although it is admittedly so mixed that the heat units from those eggs are diffused throughout the entire drum. There is a thorough mixing of the air, but no application of defined currents.

As we have seen, the apparatus of Smith discloses a defined current of air driven first over the warmer eggs."

Buckeye Incubator Co. vs. Hillpot, 22 Fed. (2) 855. In this case the District Court for the District of New Jersey found noninfringement because the defendant there blew the air upward instead of downward through the trays, and held the Smith patent specifically limited saying:

"Step by step through the patent office did Smith limit his claims to the passing of the air currents from the eggs in the more advanced stages of incubation to those in less advanced stages of incubation. Day after day

he was forced to limit his early broad claims for circulating the air through the eggs arranged in columns to forcing air in a given direction.

Stage incubation was old. See Winkler patent, No. 286,756, October 16, 1893. It was only for a very specific construction that Smith could maintain his patent, and his method cannot be broadened, either beyond the machine shown or the claims made. * * * Smith, by his own acts, abandoned any broad claims, and limited himself to air currents from the eggs in the more advanced stages of incubation to those in the less advanced stages."

The above case was affirmed in Buckeye Incubator Co. vs. Hillpot, 24 Fed. (2d) 341, by the Court of Appeals for the Third Circuit. That Court again said:

"In the Cooley case we found, as did both courts in the Wolf case, that Smith got away from the old art and conceived a new method and provided a new apparatus whereby heated air, instead of being driven hither and yon throughout the closed chamber, is driven in currents and made to circulate in the form of columns of air in predetermined paths * * * If Smith did not do this, he did nothing."

And finally the court in that case says:

"On circulation by defined currents alone Smith was awarded the patent."

Boling vs. Buckeye Incubator Co., 33 F. (2d) 347. This is another decision by the District Court for the Southern District of Ohio, and the Court there again says:

"Smith must be pinned down and limited to his own theory as required by the patent office and the decision of our Court of Appeals.

Wherefore, it is submitted that the Master herein erred in his analysis of the foregoing decisions and erred in stating that:

"The Master's own opinion and his finding is that there is no limitation which requires that the process claimed in Claims 1 and 2 be carried out by first passing the air currents over eggs in the later stages of incubation."

The Master erred in disregarding all the prior decisions and the prior art before him and in failing and refusing to properly limit the claims of the Smith patent in suit as required by said decisions and the prior art.

EXCEPTION 10.

The Master found (see page 17 of his report) that: the Circuit Court of Appeals in the Hillpot case (24 Fed. (2d) 341) while affirming the decision of the District Court (22 Fed. (2d) 955) differed from the conclusion of the District Court.

It is believed the Master erred in this finding. For instance, the District Court said, in the Hillpot case, at page 857:

"Many more patents were offered in evidence in this case than in the prior litigation. It is, however, unnecessary to consider them because Smith, by his own acts abandoned any broad claims and limited himself to air currents from the eggs in the more advanced stage of incubation to those in the less advanced stages. This course

the defendant does not follow. Hence there is no infringement."

Certainly the higher court, speaking by Circuit Judge Woolley reached the same conclusion as the District Court, namely, that the Hillpot process did not infringe the Smith process.

The higher tribunal, however, reached its conclusion by a somewhat different, and much more elaborate process of reasoning. The decision of the District Court was by Judge Bodine, who held as heretofore noted, that Smith's claim was limited to a process in which the air current was first brought into contact with the eggs in the more advanced stage of incubation.

Judge Woolley virtually said the same thing, but held that the air current in the sense of the Smith claim, was so defined and confined, due to the corridor and curtains that it could not be produced in the Hillpot machine because Hillpot had no curtains or partitions in the corridor or on opposite sides of his corridor. In other words, Judge Woolley, while admitting the cycle circulation of air, contended for by Smith, held that such a cycle could not be produced in the Hillpot machine because there were no curtains or partitions to confine or define the air current. And by this holding, Judge Woolley virtually decided (see page 344) that the Smith process could only be infringed where there was a corridor of a certain kind,

"That is a 'corridor' between tray tiers, and a corridor of a kind defined by its purpose."

and consisting of

"'a walled chamber * * * subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5, and said compartments 6 and 7' (tray tiers).

This physical arrangement is provided specifically to perform the function of maintaining and directing the air current created by the motor driven fan. Without such an arrangement the air would go where it pleased. With such an arrangement the air, confined in a corridor partitioned from the tray tiers by curtains, will move in a current or column to the point of outlet which usually is at the bottom of the corridor, when, after mushrooming, it will pass below the tiers and ascend through the egg trays in a current or column because it is confined there by the same curtains that first presented its escape from the corridor. The essence of the invention therefore is forced circulation of heated air in predetermined direction, or, stated differently, forced circulation of columns of heated air through columns of eggs. * * * * * * * * * * * * * * * * *

On circulation by defined currents alone Smith was awarded the patent. We cannot find circulation of that kind in any of the Hillpot structures. With curtains off, the tiers of trays present comb fronts to the passageway. When the warm air leaves the fan there is for a moment and for a short distance a current, but as the force weakens the current fades, and the body of heated air does not go to the opposite wall and mushroom but wanders in between each of the scores of trays and goes where it pleases. Instead of one strong current moving

in one direction in trunk form, Hillpot has a trunk current only on leaving the fan; then it divides into a multitude of branches which follow no defined courses but only courses made by the least resistance. We are constrained to find that Hillpot did not infringe the claims of the Smith patent in suit."

EXCEPTION 11.

The Master erred in finding (see pages 18 and 19 of his report):

"that there is no limitation which requires that the process claimed in Claims 1 and 2 be carried out by first passing the air currents over the eggs in the later stages of incubation".

Whereas, it was upon this theory alone that these claims were allowed by the patent office as shown by the file wrapper history of the case in the patent office, from which it is evident that the fine-haired theory of the closed cycle and its incidents contended for by Smith, was never contemplated or thought of, or dreamed of, by the patent office Examiner, when those claims were allowed.

In this connection attention is also called to Boling vs. Buckeye, 33 Fed. (2) 347, which the Master expressly admits (see page 19 of his report) is irreconcilable with the finding now under consideration.

EXCEPTION 12.

The Master erred (see page 19 of his report) in finding that the Smith disclosure was an important departure or revolutionized the practice of an old art.

Since the Fullington patent, defendant's Exhibit A-34, either alone, or combined with patents such as Zimmer, defendant's Exhibit A-29, the German patent to Stulik, defendant's Exhibit A-36, and other patents, where staged incubation is disclosed and fully recognized, contradicts this finding.

EXCEPTION 13.

The Master erred (see page 24 of his report) in finding:

"The absence of curtains or partitions in the Robbins machine is compensated by increased fan capacity",

and therefore the Robbins process became the Smith process though less effectively applied, and that the defendant is guilty of infringement.

Whereas, the decision of the Court of Appeals in the Hillpot case, supra, is conclusive against the Master's finding on this point.

Circuit Judge Woolley, speaking for the court in this case said, at page 344:

"Looking for the invention by reading the claims in the light of the specification and the file wrapper history of the patent prosecution, one fixed and definite thing is disclosed, first with reference to its presence in the apparatus and next with reference to its use in the methods. That is a 'corridor' between tray tiers, and a corridor of a kind defined by its purpose. The specification describes this by saying:

'This invention comprises a walled chamber * * * subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5 and said compartments 6 and 7' (tray tiers).

This physical arrangement is provided specifically to perform the function of maintaining and directing the air current created by the motor driven fan. Without such an arrangement the air would go where it pleased. With such an arrangement the air, confined in a corridor partitioned from the tray tiers by curtains, will move in a current or column to the point of outlet which usually is at the bottom of the corridor, when, after mushrooming, it will pass below the tiers and ascend through the egg trays in a current or column because it is confined there by the same curtains that first prevented its escape from the corridor. The essence of the invention therefore is forced circulation of heated air in predetermined direction, or, stated differently, forced circulation of columns of heated air through columns of eggs. * * * Yielding to the demand of the patent office that the 'circulation of air shall be included and defined,' Smith acquiesced in repeated rejections of his claims, proposed others and finally accepted those allowed, in each of which is embodied the conception of air movement by currents in defined channels.

Turning to the specifications for light upon the claims, we find nothing there suggested in respect to air movement except by currents in predetermined directions. With all this before him what did Hillpot do? He simply omitted curtains. He thus transformed the corridor of Smith into the passageway of the old art. * * * On circulation by defined currents alone Smith was awarded the patent. We cannot find circulation of that kind in any of the Hillpot structures. With curtains off, the tiers of trays present comb fronts to the passageway.

When the warm air leaves the fan there is for a moment and for a short distance a current, but as the force weakens the current fades, and the body of heated air does not go to the opposite wall and mushroom but wanders in between each of the scores of trays and goes where it pleases. Instead of one strong current moving in one direction in trunk form, Hillpot has a trunk current only on leaving the fan; then it divides into a multitude of branches which follow no defined courses but only courses made by the least resistance. We are constrained to find that Hillpot did not infringe the claims of the Smith patent in suit."

From this it appears that the Circuit Court of Appeals for the Third Circuit held that Hillpot had everything that Smith had, both in structure and process, except Smith's curtains, and still the court, speaking through the distinguished jurist, Circuit Judge Woolley, said there was no infringement. Hence, Hillpot with corridor, incubating compartments on opposite sides thereof, fans, and air currents all like Smith, avoided infringement by omitting Smith's curtains on opposite sides of the corridor. And the Circuit Court of Appeals for the Third Circuit said that the issue of infringement turned on this fact, the omission of the Smith curtains.

This high court did not say that by omitting these curtains Hillpot "has impaired the efficiency of his machine" or his process, and therefore could not escape infringement, but it is said by this omission he avoided infringment. It said by this omission Hillpot did not and could not employ the Smith process. Yet the Master says in the case at bar that Robbins, with an apparatus distinctly different from that of Smith, and hav-

ing no corridor in the sense of Smith, and consequently no fan in a corridor, in the sense of Smith, and no incubator compartments on opposite sides of a corridor in the sense of Smith, and no place to put curtains or partitions in his apparatus in the sense in which Smith uses these elements, is an infringer, and that he uses the Smith process though less efficiently applied. We must remember in considering this finding that the same Claim 1 of the Smith patent was directly involved in the Hillpot case, as in the case at bar, and yet the Circuit Court of Appeals in the Hillpot case held there was no infringement, and the Master in the case at bar held there was infringement.

If the Master's finding in this case is correct, what becomes of the doctrine of comity and stare decisis? If absolute confusion is to be avoided so far as this doctrine is concerned, and unless the decisions of our highest Federal courts are to be ignored as precedents, and the usual guides and landmarks in matters of this kind are to be no longer given consideration, it would appear that this finding of the Master cannot be approved.

Further, it is also pertinent and significant in this connection that the Circuit Court of Appeals in the Hillpot case, supra, said that Smith in bringing out his process was seeking to avoid an irregularity of temperature resulting from an irregular flow of air through trays of eggs arranged in sandwiched relation, that is, trays of warm eggs and trays of cool eggs intermingled as in Robbins incubator. The following is found on page 342 of the Hillpot decision:

"Now it had become a practice in incubation, born of convenience, not of necessity, to put fresh eggs at the

top of the tier and move them down as incubation progresses until the eggs that are about to hatch are at the bottom where the chicks can be taken out and the litter consequent upon hatching can be easily removed. This arrangement is not always followed. Sometimes trays of eggs in the more advanced stage of incubation are 'sandwiched' between trays of eggs in less advanced stage. These are arrangements of eggs 'at different levels.' Eggs in the more advanced state are in an exothermic condition, that is, a condition where the embryo chicks themselves produce and give off heat. These eggs are warm in themselves as opposed to eggs in the earlier stage of incubation, which, containing no animal life, are cool. The former require less artificial heat; the latter more. When heated air circulates through the chamber without definite direction, it picks up heat units expelled from warm eggs and carries them to the cool eggs and also to other warm eggs, thus producing an irregularity in the temperature of the air. Smith sought to avoid the irregularity of temperature inevitably resulting from an irregular flow of heated air through trays of warm eggs and trays of cool eggs, and so regulate the air by currents that it would strike one body of eggs, whether warm or cool, at one temperature and proceed to another body of eggs at another temperature, and by transferring heat from eggs with an excess of heat to eggs with a deficiency of heat, produce uniformity of temperature in the whole body of moving air."

Thus the Circuit Court of Appeals of the Third Circuit said Smith, in producing his process was endeavoring to avoid exactly what Robbins is doing, as Robbins' trays are sandwiched so far as the warm and cold eggs

are concerned, as referred to by Judge Woolley in the last quotation, while Smith's are progressively arranged, or so that the temperature of the eggs gradually diminishes from hot to cold, or gradually increases from cold to hot, and yet the Master says Robbins is an infringer.

For the arrangement of the trays in the Robbins incubator, see Robbins' testimony, page 434 of the Transcript, line 20, which reads as follows:

Load your incubator from the center of the shaft up and down, distributing trays over the length of the egg sections. This will balance the load and make turning of the eggs easy. * * * * * * * * * * * * *

Do not stack fresh eggs in the incubator close together. Alternate the trays—that is, miss or skip a tier at each of the first settings, and when no more places are left to be skipped or missed, fill in the missed places with the subsequent settings."

In thus testifying, Robbins was quoting from his instruction manual for assembling and operating Robbins electric incubators which manual is referred to and marked for identification as defendant's Exhibit H, page 433 of the transcript. And yet the Master claims to be in harmony with this decision as he has quoted from it. However, the position of the Circuit Court of Appeals on the question of infringement in the Hillpot case is absolutely opposed to the Master's finding, as the court in the Hillpot case found no infringement, when the process was much nearer Smith than is the Robbins process.

Further, the higher court virtually said in the Hillpot case that Smith in getting up his process was endeavoring

to avoid precisely what Robbins is doing; and hence we believe the Master erred in the finding which we have designated "13".

EXCEPTION 14.

The Master erred in holding (see page 25 of his report) that:

"There appears to be no difference in the method of applying currents in the Robbins machine, and that specified in the patent."

Whereas, Robbins has no corridor, no incubating chambers on opposite sides of a corridor, no curtains separating the corridor from the incubating chambers. In fact, no place to put curtains, and no fans in a corridor, all of which were held in the Hillpot case, supra, necessary in order that the Smith process might be produced.

EXCEPTION 15.

The Master erred (see page 25 of his report) in holding that:

"To find infringement it is only necessary to find that eggs in more than one stage of incubation, arranged at more than one level in a closed chamber with restricted openings, are subjected to the air currents."

since this is contrary to the doctrine established by the Circuit Court of Appeals in the Hillpot case, supra. This finding of the Master is also erroneous since a process of such scope is anticipated by the Fullington patent, defendant's Exhibit A-34, either alone or in connection with the Zimmer patent, defendant's Exhibit A-29, or the Stulik patent, defendant's Exhibit A-36, or other patents disclosing stage incubation with which the Fulling-

ton structure might be combined to carry out the process disclosed by Fullington.

EXCEPTION 16.

The Master erred in disregarding the evidence which clearly establishes noninfringement. In his report the Master says:

"Upon the scope of the claims defendant has argued that the file wrapper and contents of the Smith application impose specific limitations. The contention is that this limitation goes to the extent of limiting Smith to an arrangement whereby the currents of air coming from the fan must first be passed over the eggs in the last stages of incubation and thence over the other eggs, so that the progression is such that the newest eggs are the last to be reached by the circulating air. This must be upon a theory that the transference of heat from old to new eggs must be accomplished in one cycle. This limitation is not expressed in either of the claims,"

In this conclusion the Master clearly erred. As was said in the Hillpot case, supra:

"Step by step through the patent office did Smith limit his claims to the passing of the air currents from the eggs in the more advanced stages of incubation to those in less advanced stages of incubation."

In the specification of his patent Smith points this out clearly where he says, beginning with line 29, page 2: "the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above

the lower series of trays until it reaches the distributing space 21 above the fan."

His expression in his claims with respect to the forced current being:

"of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber of substantially the same temperature,"

must be read in the light of his specification.

Defendant's expert, Professor Robert L. Daugherty, head of the Mechanical Engineering School of the California Institute of Technology, described this very clearly (p. 333). He says:

"As far as the circulation through the eggs is concerned, according to the patent, in the Smith machine, the fresh eggs are put in at the top, and are progressively moved downwards towards the bottom, so that the hottest eggs are at the bottom and the coldest eggs at the top, of this column of eggs, and the circulation of air is such that the air is compelled, all of it, to flow in through the bottom and rise up through the top, so that a given particle of air goes successively through every layer of eggs, starting with the hottest eggs and finishing up with the coldest eggs."

Again, on page 334, Professor Daugherty testified as follows:

"Q. In the Smith process the air is introduced below the hotter eggs first, isn't it?

A. Yes.

Q. And moves upward through eggs arranged progressively, with the newer eggs in the process of incubation at the top?

A. That is correct.

Q. Is there any arrangement in the Robbins machine similar to that?

A. There is no arrangement like that at all."

Again on page 335, Professor Daughterty testified:

"Q. In the Robbins Machine, does the air pass in any appreciable extent from these hotter eggs in the hatching section to the cooler eggs, although they may be in different stages, in the incubating section?

A. It does not in any appreciable way.

Q. Did you find any flow of air from the incubating section into the hatching section in the Robbins?

A. Yes, I found a slight flow in that direction.

Q. That would then be a movement of air from the relatively cooler to the relatively hotter eggs, would it not?

A. It would.

Q. In other words, the reverse of the proposition set forth in the Smith process?

A. That is correct.

Q. Did you find in the Robbins machine a central corridor in which there were no eggs at all.

A. I did not."

Professor Daugherty further pointed out essential differences between the Robbins process and that of the Smith patent in suit with respect to the alleged air currents. He said that defined, predetermined currents were made possible in the Smith process by reason of the curtains or partitions whereas, in Robbins there being no partitions or curtains the course of the air is not obvious and is very different from that in the Smith process.

The fan used by Robbins is also essentially different and produces a different result. There being no corridor in the Robbins machine and no equivalent of it, Professor Daugherty found that in the Robbins machine the circulation of air would be quite different from that in the Smith process and that all of the air would not go to the bottom (direct from the fan) and pass up through the hatching and other trays, but that it would enter the various trays at different points. In other words, the air would not be directed in definite or predetermined currents. (Record pp. 338 to 341). Again, on page 342, Professor Daugherty testified that:

"There is no definite provision (in Robbins) that would compel the air to flow in one direction or the other, except the aero-dynamics involved. There is no mechanical device such as a partition, curtain or wall to compel the air to follow that course. One could not tell by a mere inspection of the machine which way the air would follow.

Q. Is it not a fact that in the Robbins machine the air current is just as likely to strike cold eggs first as it is to strike hot eggs first?

A. It is, and, in fact, that is what I found Thursday in Gardena."

The record herein contains much more evidence, oral and documentary, which was clearly overlooked or disregarded by the Master and which, when given due weight and consideration, warrants a finding of non-infringement in this case.

EXCEPTION 17.

The Master erred in failing to find and report that the incubators manufactured and sold by J. L. Robbins, doing business as the Robbins Incubator Manufacturing Company, and used by the defendant, Herbert Waxham, and the processes employed therein, or in connection therewith, do not infringe the Smith patent in suit and particularly Claims 1 and 2 thereof.

EXCEPTION 18.

The Master erred (see page 26 of his report) in finding that the Smith patent in suit, and particularly Claims 1 and/or 2 thereof,

"are good and valid in law."

Whereas, each of these claims is anticipated by the process disclosed either in the Fullington patent, defendant's Exhibit A-34 alone, or in combination with Zimmer patent, defendant's Exhibit A-29; Stulik, defendant's Exhibit A-34, and other patents disclosing stage incubation; and also by Proctor, defendant's Exhibit A-15, and other similar patents in the record showing the Smith air currents, in combination with Zimmer, defendant's Exhibit A-29; Sutlik, defendant's Exhibit A-34, and other patents in the record showing stage incubation.

EXCEPTION 19.

The Master erred in finding (see page 26 of his report) that Claim 1 of the Smith letters patent in suit has been infringed by the defendant.

Whereas, the evidence in the record, and *herefore* referred to in these exceptions, establishes the contrary; and whereas, the decisions of the courts to which reference has heretofore been made in these exceptions, and

particularly the decision of the Circuit Court of Appeals in the Hillpot case, supra, establishes the contrary, and should be followed under the doctrine of comity and stare decisis.

EXCEPTION 20.

The Master erred (see page 27 of his report), in recommending that a decree be entered holding the Smith patent in suit valid as to Claims 1 and 2, or either of them, and/or that an accounting against the defendant of profits, and/or damages be had, and/or that an injunction be issued against the defendant enjoining the use of acts held by the master to be an infringement.

And as a reason for this exception, attention is called to the previous exceptions on behalf of defendant, to the evidence in the case and to the decisions of the courts to which reference has heretofore been made.

An oral hearing and oral argument on each and every of the foregoing exceptions is hereby requested.

HERBERT H. WAXHAM, doing business as WAXHAM HATCHERIES,

By A. J. O'Brien
W. R. Litzenberg
Solicitors and Counsel for Defendant.

Copy of the within exceptions received this 19th day of August, 1930, for Plaintiffs

Lyon & Lyon
Lewis E Lyon
Attys for Plaintiffs

[Endorsed]: Filed Aug 19 1930 R. S. Zimmerman, Clerk By Edmund L Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ORDER

Pursuant to order entered this day that this cause be and stand reopened for re-reference to the Master and the taking of further proofs by depositions to be submitted to the Master, in order that the Master may file herein a supplemental report, and due cause thereunto appearing,

IT IS HEREBY ORDERED that defendant, by his counsel, may withdraw "Fullington Exhibit A", in two parts, filed herein and identified in the affidavit of Roy F. Fullington, likewise filed herein on the motions to reopen herein, from the office of the Clerk of the Court, and may cause same to be transmitted to such place or places as depositions may be taken herein with relation to the Fullington prior use referred to in the motions herein to reopen this cause, such exhibit in two parts to be returned with depositions so taken;

AND IT IS HEREBY FURTHER ORDERED that defendant may amend his answer herein prior to the return of said depositions to the Master herein, to cause said answer to conform to the proofs to be taken on behalf of defendant concerning said Fullington alleged prior use and the alleged Lawry prior use, likewise referred to on said motions to reopen.

DATED: Los Angeles, California, December 2nd, 1930.

John R. Hazel
Judge of United States District Court

[Endorsed]: Filed Dec 2 1930 R. S. Zimmerman, Clerk By Edmund L. Smith, Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ORDER REOPENING CAUSE FOR TAKING FURTHER PROOFS AND REFERRING CAUSE BACK TO SPECIAL MASTER

This cause coming on to be heard on two motions of defendant herein to reopen this cause for the taking of further proofs relating to matters of alleged prior use of certain inventions and practices referred to in said motions and the attendant affidavits as the Fullington prior use and the Lawry prior use, and plaintiffs having filed a memorandum opposing said motions, and said motions having been duly argued in open court, Albert L. Ely, Esq., and Leonard S. Lyon, Esq., appearing as Solicitors and Counsel for Plaintiffs, and William I. Aitken, Esq., and Raymond Ives Blakeslee, Esq., appearing as Solicitors and Counsel for Defendant, upon due consideration thereof,

IT IS HEREBY ORDERED:

That the said motions of defendant herein to reopen this cause for the taking of further proofs be and are hereby allowed and this cause is hereby referred back to David B. Head, Esq., as Special Master, to consider the proofs that may be offered by the respective parties with respect to either or both of said prior uses, to make his findings of fact and conclusions of law thereon and to report to the court, subject to full review upon exceptions duly filed to such report.

IT IS FURTHER ORDERED:

That the proofs of the respective parties with respect to such prior uses be taken by deposition pursuant to

the provisions of the de bene esse Sections of the United States Revised Statutes, Sections 863, 864 and 865, counsel for the respective parties having stipulated and agreed that all of defendant's proofs with respect to said prior uses are to be taken at the office of James H. Linton, Esq., Attorney at Law, St. Louis, Missouri, on the 8th and 9th days of December, 1930, commencing at the hour of 10 o'clock A. M., and at the office of George H. Mitchell, Esq., Attorney at Law, New York City, N. Y., on the 12th and 13th days of December, 1930, commencing at the hour of 10 o'clock A. M., or at such other places, in such cities, and at such times to which adjournment may be taken for the purpose of convenience.

That plaintiffs' proofs with respect to such alleged prior uses and/or with respect to the date of invention of the patent in suit shall be taken within two weeks from and after the 16th day of December, 1930, said depositions to be taken upon reasonable notice to counsel for the defendant of the time and place or times and places of the taking thereof.

That the aforesaid depositions of the respective parties be promptly returned and filed with the clerk of this court in accordance with the statutes of the United States made and provided for that purpose.

That subject to the approval of the Special Master, the parties hereto serve and file briefs before the Special Master with respect to such alleged prior uses and the proofs offered relative thereto, following the filing of such depositions, as follows:

Defendant's opening brief—within 20 days
Plaintiffs' brief —within 20 days thereafter
Defendant's reply brief—within 10 days thereafter.

That the Clerk deliver to the custody of such Special Master on his request, such papers, files and records in this cause as may be desired by the Special Master for the purposes of this order.

THIS ORDER, and each part thereof, is based upon the following terms and conditions:

That defendant shall forthwith cause to be paid to counsel for plaintiffs the sum of Two hundred Fifty Dollars ($250.00) as attorneys' fees, and defendant shall cause to be paid, as incurred, the proper expenses of both plaintiffs and defendant in and about the taking of said depositions, including notary fees, reporters' fees and traveling expenses and hotel bills of witnesses, and witness fees, and, in addition, shall similarly meet and defray the proper and reasonable traveling expenses and living and hotel expenses of counsel for plaintiffs, not more than two in number, which expenses shall be reasonably incurred solely in and about the attendance upon and the taking of said depositions.

The exceptions of both plaintiffs and defendant to the Report of the Special Master heretofore filed herein shall stand in abeyance, pending the incoming of said Supplemental Report of the Special Master, such exceptions to be heard with such additional exceptions as may be filed to the Supplemental Report of the Special Master as aforesaid.

An exception to this order is allowed to plaintiffs.

Dated, Los Angeles, California, December 3rd, 1930.

John R Hazel
United States District Judge

Approved as to form as provided in Rule 44:
Leonard S. Lyon
Solicitor & Counsel for Plaintiffs

Raymond Ives Blakeslee,
Solicitor & Counsel for Defendant

[Endorsed]: Filed Dec 3-1930 R. S. Zimmerman, Clerk By M L Gaines Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

AMENDMENT TO ANSWER OF DEFENDANT, PURSUANT TO ORDER OF COURT HEREIN DATED DECEMBER 2nd, 1930

Insert in Answer of defendant, on page 5, before paragraph "17", (which renumber "18") the following:

17. Further answering, defendant avers and alleges that, as an additional, further or separate defense, the subject-matter of said Letters Patent, No. 1,262,860, in suit, is invalid and void as to claims 1 and 2 thereof, and in entirety, in that the subject-matter of each of said claims was not novel or patentable at the time of the alleged invention thereof by said Samuel B. Smith, as alleged in said Bill of Complaint; and that each of said claims, and said Letters Patent, is and are invalid and void for the reason that the subject-matter thereof had been invented, known, made and publicly used by or

on behalf of Rolla Lawry, then of Pacific, Missouri, and now of Port Chester, N. Y., and Roy F. Fullington, then and now of Clifton Hill, Missouri, prior to the alleged invention or discovery thereof by said Samuel B. Smith, or more than two years prior to the application of said Samuel B. Smith for said Letters Patent No. 1,262,860, at said Pacific and Clifton Hill, Missouri, and elsewhere, by said Rolla Lawry and said Roy F. Fullington, and others on their behalf, whereby such subject-matter of said claims and each thereof, and of said Letters Patent No. 1,262,860 in entirety, was not novel and patentable and did not amount to invention at the time of the alleged invention thereof by said Samuel B. Smith, and whereby said Samuel B. Smith was not the original and first inventor or discoverer of any material or substantial part thereof.

Raymond Ives Blakeslee
William I. Aitken,

Solicitors & Counsel for Defendant.

[Endorsed]: Received two copies of the within Amendment of Answer of defendant this 5th day of December, 1930. Leonard S. Lyon, solicitor & counsel for plaintiffs Filed Dec 6-1930 R. S. Zimmerman, Clerk By Edmund L. Smith, Deputy Clerk.

[TITLE OF COURT AND CAUSE.]

SUPPLEMENTAL AMENDMENT TO ANSWER OF DEFENDANT, PURSUANT TO ORDER OF COURT HEREIN DATED DECEMBER 2nd, 1930

Insert in Answer of defendant, on page 5, immediately before paragraph "18", originally "17", which renumber "20", the following:

18. Further answering, defendant avers and alleges, as an additional, further, alternative or separate defense, that said Samuel B. Smith surreptitiously or unjustly obtained said Letters Patent No. 1,262,860, in suit, for that which was, in fact, invented by another, Rolla Lawry, then of Pacific, Missouri, and now of Port Chester, New York, who was using reasonable diligence in adapting and perfecting the same, both before and after the time of the alleged invention thereof by said Samuel B. Smith, and who made, constructed, assembled and publicly used or caused to be made, constructed, assembled and publicly used, an embodiment thereof prior to the time of said alleged invention thereof by said Samuel B. Smith.

19. Further answering, defendant avers and alleges, as an additional, further, alternative or separate defense, that said Samuel B. Smith surreptitiously or unjustly obtained said Letters Patent No. 1,262,860, in suit, for that which was, in fact, invented by another, Roy F. Fullington, then and now of Clifton Hill, Missouri, who was using reasonable diligence in adapting and perfecting the same, both before and after the time of the alleged invention thereof by said Samuel B. Smith, and who made, constructed, assembled and publicly used, or caused

to be made, constructed, assembled and publicly used, an embodiment thereof prior to the time of said alleged invention thereof by said Samuel B. Smith.

Raymond Ives Blakeslee
William I. Aitken,
Solicitors & Counsel for Defendant.

[Endorsed]: Received two copies of the within Supplemental Amendment to Answer this 8th day of December, 1930. Leonard S. Lyon solicitor & counsel for plaintiffs Filed Dec 9-1930 R. S. Zimmerman, Clerk By M L Gaines Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

SUPPLEMENTAL REPORT OF SPECIAL MASTER

TO THE HONORABLE JUDGES OF THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION:

The undersigned, DAVID B. HEAD, heretofore appointed special master in the above entitled cause herewith submits his report pursuant to the order of December 3, 1930. This order re-opened the cuase for the taking of further proof and directed the master to report his findings upon those proofs.

The reference was limited by the order to a consideration of the alleged prior uses set out in the Amendment to the Answer, filed December 6, 1930. The Amend-

ment to the Answer alleges that the subject matter of the patent in suit had been previously invented, known, made and publicly used by or on behalf of Rolla Lawry at Pacific, Missouri and by Roy F. Fullington at Clifton Hill, Missouri.

Pursuant to the order proofs were taken by deposition and the issues submitted to the master upon the filing of briefs.

The Lawry use

The prior use by Lawry has been raised in previous cases but the record in this case does not show what evidence was before the courts in those cases. From the evidence the master finds that beginning in the latter part of 1915 Rolla Lawry constructed a large incubator at Pacific, Missouri. The construction of the said incubator was completed by March of 1916 and was thereafter used during the hatching season of 1916, that is from March until about July of that year and the said incubator was used during the first part of the hatching season of 1917.

The Lawry incubator consisted of a chamber about 20 by 20 by 8 feet capable of holding a large number of eggs. From a small adjoining chamber air was heated and driven by a fan through an air duct to a space above the ceiling of the large chamber. From this space through holes in the ceiling the air passed down into the incubating chamber at a low velocity. Holes in the floor led to a space below the floor from which a duct led back to the heating chamber. Here the air was again heated and driven by the fan back to the incubating chamber. The air passed through the incubating chamber in no definite currents. It passed around

the eggs and came in contact with convection currents in the incubator. The fan created a suction which withdrew the air from the bottom of the incubating chamber. Small openings provided for ventilation and moisture was provided to increase the humidity of the air. Eggs were placed in the large chamber at intervals, so that eggs in different stages of incubation were in the chamber at the same time. The eggs were turned and moved from top to bottom until hatched and then the chicks removed.

It appears from the evidence that the Lawry incubator was used with varying success during the season of 1916 and part of the season of 1917 when its use was abandoned. Considering the size of the fan, the power of the motor used to drive it and the size of the hatching chamber the conclusion is reached that no definite currents of air were present during the operation of the Lawry incubator.

Assuming Lawry to be prior to Smith, the scope of the Smith claims as previously construed are not effected. The prior decisions in the Third and Sixth Circuits, as well as the conclusion previously reached by the master herein all limit the Smith method claims to the use of definite currents. The previous conclusion of infringement of claim 1 was reached after a finding of definite currents of air in the defendant's incubator, which were comparable to currents found in the incubator which reduced the Smith disclosure to practice.

Smith date of invention

From the evidence the master finds that S. B. Smith reduced to practice the invention in suit at Cleveland, Ohio in March 1915. At that time he built and used

three large incubators in which eggs in different stages of incubation were placed and subjected to definite currents of air.

Some question has been raised on the statement in the opinion of Judge Westenhaver in the case of Buckeye vs. Wolfe, 291 Federal 253, that the patentee Smith filed an affidavit during the prosecution of his patent which claimed only successful operation in 1916. This, no doubt, refers to the affidavit of February 14, 1918 in the file wrapper, wherein the patentee stated that his invention had not been in public use for more than two years before the date of his application. The learned Court probably calculated from the date of the affidavit rather than the date of the application. The same Courts conclusion that five seasons prior to 1920 would carry back to the year 1914 also appears to be an error in calculation.

The evidence establishing the date of the Lawry use and Smiths reduction to practice has been attacked as not measuring up to the rule of degree of proof laid down in the Barbed Wire Case. 143 U. S. 275. In each instance the testimony of the principals has been corroborated by several other unimpeached witnesses, and no evidence to the contrary was offered. The proof is sufficient in each instance.

The Fullington Use.

The evidence establishes the use of the Fullington device during the hatching season of 1914. It is clearly prior to Smith. The Fullington use resulted in a patent which is defendant's Exhibit A-34. This patent was in evidence on the first reference. It was considered at that time by the experts but inasmuch as counsel for

the defendant did not further urge its consideration the master did not deem it necessary to include a discussion of it in the report that was filed. It now appears that the patent does not correctly describe the actual devise used by Roy F. Fullington at Clifton Hill, Missouri in 1914. The incubator is in evidence as defendant's Exhibit CC and the principal part to be considered is separately marked as defendant's Exhibit DD.

The Fullington incubator when operated consisted of a small enclosed chamber wherein a single tray of eggs, about 120 in number could be placed. A lamp supplied heat and a pan of water on the bottom of the chamber supplied moisture. Attached to one side of the chamber was a small electric fan operated by dry batteries. An air duct led into the interior of the incubator above the eggs and discharged air driven by the fan against a baffle plate which diffused the air downward toward the eggs. Near the end of the baffle plate closest to the fan an exhaust duct was provided. A thermostat was provided which started and stopped the motor at predetermined temperatures. In operation the tray was filled with eggs and the usual still air incubating process was followed. When the air inside the incubating chamber became too hot the thermostat caused the motor to start and drive cooler air from the outside into the chamber. When the temperature was reduced to the proper degree the thermostat acted to stop the motor.

In this device the fan attachment was used solely to keep the eggs from overheating. The eggs placed in the incubator were all in the same stage of incubation, so it follows that any air currents present would not function to transfer heat from hot eggs to cooler ones.

Further the fan was in operation only during short periods at considerable intervals. There were no definite continuous currents which have been heretofore held to be essential to the Smith method.

The Smith invention has been considered as a solution of the problem of staged incubation for the reason that Smith applied definite currents of air to the eggs in the incubating chamber, those currents of air being driven at such velocity that heat units are transferred from old eggs to new eggs. No currents of this character are found in either Lawry or Fullington.

Wherefore the master concludes:

1. That the Lawry use began in March, 1916.
2. That the Lawry use, if prior to Smith's reduction to practice does not anticipate the Smith invention.
3. That the Fullington use began in the spring of 1914.
4. That the Fullington use does not anticipate the Smith invention.
5. That the invention of the patent in suit was conceived prior to and reduced to practice in March 1915.

Recommendation

The master recommends that the relief previously recommended be granted.

Respectfully submitted,

David B Head,
David B. Head
Special Master

[Endorsed]: Filed Aug 21 1931 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

EXCEPTIONS TO SUPPLEMENTAL REPORT OF SPECIAL MASTER ON RE-REFERENCE

Comes now defendant in the above-entitled case, and files with and presents to the Court the following exceptions to the Supplemental Report of Special Master on Re-Reference. Defendant, so excepting to such supplemental Report on Re-Reference, states as grounds and reasons for such exceptions, the following:

We make it a basic exception to the Master's Supplemental Report herein that the Master has erred in finding that the Smith patent method claim 1 is valid and rests for validity principally upon the use of definite currents, and that, therefore, claim 1 of the Smith patent is infringed, while both plaintiff Smith, and witness Cugley for plaintiffs, an officer of the other plaintiff, admit that Smith made no such invention and that same was old, and that the application of a power fan and forced draft to an incubator was not invention and they did not contend it was an invention.

EXCEPTION 1.

That the Master erred in finding that the Lawry use did not anticipate the Smith invention.

EXCEPTION 2.

That the Master erred in finding that the Fullington use did not anticipate the Smith invention.

EXCEPTION 3.

That the Master erred in finding that the invention of the patent in suit was conceived prior to and reduced to practice in March, 1915.

EXCEPTION 4.

That the Master erred in not finding that the Lawry use anticipates the Smith invention.

EXCEPTION 5.

That the Master erred in not finding that the Fullington use anticipates the Smith invention.

EXCEPTION 6.

That the Master erred in not finding that the invention of the patent in suit has as its first evidence of conception, if any, and reduction to practice, the date of the application of the Smith patent in suit, to wit: October 26, 1916.

EXCEPTION 7.

That the Master erred in not finding that the patent in suit is devoid of novelty and/or invention over the Lawry and Fullington uses and/or inventions.

EXCEPTION 8.

That the Master erred in not finding that Smith surreptitiously or unjustly obtained the patent in suit because of the prior inventions and uses of Lawry and Fullington.

EXCEPTION 9.

That the Master erred in not finding that the patent in suit is to be strictly limited, if valid, because of the

prior inventions and uses of Lawry and Fullington, and so not infringed.

EXCEPTION 10.

That the Master erred in not finding that the evidence indicates that Lawry disclosed his invention to Smith prior to the application for the Smith patent in suit.

EXCEPTION 11.

That the Master erred in not finding that it was a matter of mere degree as between the velocity of the fan or fans of the Smith patent and velocity of the fan of the Lawry use, the Master finding that the Lawry use fan operated to drive the air at a "velocity", and finding that the air was "driven by the fan back to the incubating chamber".

EXCEPTION 12.

That the Master erred in finding that the air in the Lawry incubator use passed through the incubating chamber "in no definite currents", at the same time finding that it had a cycle of circulation in the incubator.

EXCEPTION 13.

That the Master erred in not finding that the defendant has not infringed in the use of the Robbins incubator, based upon the finding that the Lawry incubator did not force air in any definite currents, inasmuch as the Robbins incubator does not use any definite currents of the Smith patent.

EXCEPTION 14.

That the Master erred in not finding that defendant has not infringed the Smith patent as limited by the prior invention and uses of Lawry and Fullington.

EXCEPTION 15.

That the Master particularly erred in not strictly limiting the Smith patent so as to find same not infringed, in view of the prior adjudications of the Smith patent, and further in view of the opinion of the Circuit Court of Appeals of the Tenth Circuit rendered July 13, 1931, in John L. Robbins, etc., Appellant, vs. Ira M. Petersime & Son, etc., Appellees, Case No. 333, in which the said Circuit Court of Appeals reviewed such prior adjudications and strictly construed the Smith patent with respect to the definition of the alleged invention thereof and the limitations of the claims thereof, as per certified copy of said opinion annexed to Exceptions of Draft of Supplemental Report herein, and made a part thereof and hereof.

EXCEPTION 16.

The The Master erred in not finding anticipation and/or want of invention and/or prior invention of the Smith patent in and by and because of the Lawry prior invention and use upon the face of the findings of the draft report with respect thereto, and upon the face of the depositions taken on re-reference, in which Smith and plaintiffs' witnesses admitted no invention inhered in the use of forced draft in an incubator or in any particular velocity of forced draft, or in the provision of ventilation or moisture or staged incubation or provision of heat in an incubator.

EXCEPTION 17.

That the Master erred in finding that the Smith invention was conceived prior to and reduced to practice in March, 1915, inasmuch as the depositions, and particularly

the testimony of Cugley, make it clearly appear that the Smith incubator was not a success or operative as late as the year 1918.

EXCEPTION 18.

That the Master erred in not finding Smith to be impeached on the face of his deposition and that of the witness Cugley.

EXCEPTION 19.

That the Master erred in not finding Cugley to be impeached on the face of his deposition and that of Smith.

EXCEPTION 20.

That the Master erred in not finding the Smith patent void in view of the prior adjudications thereof coupled with the admissions of Smith and Cugley in their depositions that fan speed, forced draft in an incubator, and definite currents did not amount to invention and were not new in an incubator.

EXCEPTION 21.

That the Master erred in not finding non-infringement in that the Robbins incubator of defendant's use does not use any definite current of the Smith patent, proceeding first to oldest eggs and thence to younger eggs, but applies the air to the eggs indiscriminately, the eggs being in sandwiched relation and incapable of being impinged upon by any definite currents in the manner defined in the Smith patent and prescribed by prior adjudications and the file wrapper.

EXCEPTION 22.

That the Master erred in not finding that claim 1 of the Smith patent is invalid for want of novelty or invention on the face of the depositions, over the Lawry and Fullington uses and inventions, and upon the face of the admissions and concessions of the witnesses for plaintiffs.

EXCEPTION 23.

That the Master erred in not finding that the witnesses for plaintiffs and plaintiff Samuel B. Smith, Claude Hull, Volney L. Graham, Mrs. Graham and George Cugley were fatally biased, prejudiced and interested and related.

EXCEPTION 24.

That the Master erred in ruling the plaintiffs carried the burden of proving conception and reduction to practice by Smith prior to October 26, 1916, or prior to the Lawry use and invention, or that the attempted proofs in such behalf were of the weight and order required by the authorities.

EXCEPTION 25.

That the Master erred in recommending that the relief previously recommended be granted.

EXCEPTION 26.

That the Master erred in not granting the motion to suppress the depositions of Hull, the Grahams, Smith and Cugley as of biased, prejudiced, interested, related and impeached witnesses.

EXCEPTION 27.

That the Master erred in finding that Smith made any conception whatsoever as reflected by the subject-matter of the patent in suit or claim 1 thereof.

EXCEPTION 28.

That the Master erred in not finding the Smith patent and claim 1 thereof to be limited to the use of a corridor and curtains, and that no infringement could, therefore, attach to any act of defendant or any use of the Robbins incubator.

EXCEPTION 29.

That the Master erred in finding that the plaintiffs carried the burden shifted to them under the authorities after the proof of the Fullington and Lawry prior inventions and uses.

EXCEPTION 30.

That the Master erred in not finding that plaintiffs utterly failed to carry the burden shifted to them to carry Smith's date of alleged invention back of the proofs of the Lawry and Fullington prior inventions and uses.

EXCEPTION 31.

That the Master erred in not finding that the alleged invention of the Smith patent and claim 1 thereof is a mere matter of heat and ventilation engineering not arising to the dignity of invention.

EXCEPTION 32.

That the Master erred in finding that the testimony of Smith has been corroborated by other unimpeached

witnesses and that the proof in such behalf is sufficient, when no pertinent physical or documentary evidence was adduced in such behalf and the witnesses were biased, prejudiced, interested and impeached, and oral testimoney in such behalf, without corroborating physical or documentary evidence, is not acceptable under any pertinent authority.

EXCEPTION 33.

That the Master erred in not finding that the Fullington prior use and invention clearly anticipated anything in claim 1 of the Smith patent pertinent to forced air circulation, and in not finding the said claim void upon the very findings of the Master that definite currents constituted Smith's alleged invention and that the Fullington use employed "air driven by the fan" and "diffused", and kept the "eggs from overheating".

EXCEPTION 34.

That the Master has entirely erred in his interpretation of claim 1 of the Smith patent on the face of the file wrapper, the patent itself, and the prior adjudications of the Smith patent.

EXCEPTION 35.

That the Master erred in not finding that the depositions taken on behalf of plaintiffs, including those of plaintiff Smith and plaintiff-corporation's officer Cugley, are unbelievable as to the attempt to carry back the date of the Smith patent invention, and upon their faces are a travesty upon due procedure and required proof in such behalf.

EXCEPTION 36.

That the Master erred in finding that no definite currents of air were present in the operation of the Lawry incubator during the operation thereof, as being contrary to the plain and conclusive evidence in such behalf and as evidenced by the very finding of the Master that the air was "driven by the fan back to the incubating chamber" and "air was heated and driven by a fan through an air duct" and passed down into the incubator chamber at a low "velocity", and in finding upon such error that the scope of the Smith claims as previously construed are not affected by the Lawry use if prior to Smith.

EXCEPTION 37.

That the Master erred in not recommending that all relief previously recommended, as well as any relief whatsoever, be denied to plaintiff.

EXCEPTION 38.

That the Master erred in not finding defendant's use complained of in this cause entirely justified under law under the Robbins patent in evidence.

EXCEPTION 39.

That the Master erred in not finding the Smith patent thoroughly void as the function of mechanism and apparatus disclosed in the Smith patent and without which such method cannot be practiced.

EXCEPTION 40.

That the Master erred in writing in and formulating in the Reports the substance of an arbitrarily synthetic claim expanding the alleged Smith invention and not in keeping with the necessarily restricted and limited claims of the Smith patent.

. . . .

Upon all and singular the foregoing exceptions and grounds and reasons of exception, it is earnestly solicited that the Court overrule and refuse to confirm the said Supplemental Report of Special Master on Re-reference, in addition to so overruling and refusing to confirm the Report of the Special Master on the Original Reference herein, and that the Court order that the bill of complaint herein be dismissed with costs to defendant. These exceptions, thus, are submitted with the Exceptions heretofore filed to the Report of the Special Master, for joint consideration by this Court.

Respectfully submitted,

Raymond Ives Blakeslee,
Kelly Lyons Taulbee,

Solicitors and Counsel for Defendant.

[Endorsed]: Received Copy of the within Exceptions to Supplemental Report of Special Master on Re-Reference, this 8th day of September, 1931. Leonard S. Lyon —Lyon & Lyon Solicitors and Counsel for Pltfs. M. L. Filed Sep 8-1931 R. S. Zimmerman, Clerk By Thomas Madden Deputy Clerk

At a stated term, to wit: The FEBRUARY Term, A. D. 1932, of the District Court of the United States of America, within and for the CENTRAL Division of the Southern District of California, held at the Court Room thereof, in the City of LOS ANGELES on THURSDAY the 30TH day JUNE in the year of our Lord one thousand nine hundred and thirty-two.

Present:

The Honorable PAUL J. McCORMICK, District Judge.

SAMUEL B. SMITH and the	)	
	)	
BUCKEYE INCUBATOR CO.,	)	
	)	
Plaintiffs,	)	
	)	
vs.	)	Q-69-M-Eq.
	)	
HERBERT H. WAXHAM, doing	)	
	)	
business as WAXHAM HATCHERIES,	)	
	)	
Defendant.	)	

Upon careful consideration of the forty exceptions to the report and supplemental report of the special master filed respectively August 1st, 1930, and August 21st, 1931, said exceptions are disallowed, not accepted, and denied in toto, and a decree is accordinglly ordered for complainants against defendant, pursuant to said report and supplemental report of the special master as recommended by him. An exception to the aforesaid ruling is

hereby noted and allowed to defendants. Solicitors for complainant will accordingly prepare and present a decree in conformity with this order and with the additional direction to David B. Head, Esq., for an accounting in accordance with the rules and practice in equity and of this Court.

In amplification of the foregoing order, it should be states that the patent in suit has been by many district courts, in contested actions held to be valid and upon review, the validity of said patent has been declared by the Circuit Courts of Appeal of the 3rd, 6th, and 8th circuits. See Buckeye Vs. Cooley, 17 Fed. 2nd, 453. Buckeye Vs. Petersine, 19 Fed. 2nd, 721. Buckeye Vs. Hillpot, 24 Fed 2nd, 342. Miller's Hatcheries Vs. Buckeye, 41 Fed. 2nd, 619. There is also an instructive exposition of the scope and processes of the Smith and Robbins patents by the 10th Circuit Court of Appeals in Robbins vs. Petersime, 51 Fed. 2nd, 174.

Although the Circuit Court of Appeals of the 9th Circuit, as far as we are advised, has never considered or passed upon the validity of the patent in controversy, the decisions of other Courts of Appeal, under the rule of comity are of great weight, but an independent examination and study of the record here has convinced me that the patent should not be defeated. The only debatable issue here is that of infringement because of a limitation as to order of eggs within the incubator under a proper interpretation of claim 1 of the Smith patent 1,262,860. I believe this question to be closed. I am not convinced, however, that the findings of the master thereon are not correct.

Dated at Los Angeles, California, June 30, 1932.

[TITLE OF COURT AND CAUSE.]

NOTICE OF PETITION FOR REHEARING

PLEASE TAKE NOTICE that on Monday, July 18, 1932, in the Courtroom of this Court, in the Federal Building, Los Angeles, California, usually occupied by the Hon. Paul J. McCormick, a Judge of this Court, and at the hour of 10 o'clock A. M., or at such other time and place as may be assigned for the consideration thereof, defendant will present to this Court its annexed Petition for Rehearing of this cause upon the exceptions of defendant heretofore submitted to this Court and ruled upon in the minute order of this Court made and entered herein June 30, 1932.

Dated, Los Angeles, California, July 1, 1932.

Raymond Ives Blakeslee,
Kelly L. Taulbee,
Solicitors and Counsel for Defendant

TO: PLAINTIFFS ABOVE MENTIONED, AND THEIR SOLICITORS AND COUNSEL OF RECORD.

[TITLE OF COURT AND CAUSE.]

PETITION FOR REHEARING.

Comes now defendant herein above named, by his Solicitors and Counsel, and petitions this Honorable Court for a rehearing of this cause as submitted to this Court upon exceptions heretofore filed by defendant to the Report and Supplemental Report of the Special Master filed herein, and for a stay of signing, filing and entry of decree herein pending determination by this Court of this petition. This petition not resting upon any showing of newly discovered evidence, no order to show cause is petitioned and the petiton is noticed for such date as will permit plaintiffs to serve and file such reply to the petition as they may be advised.

Petitioner avers that this Honorable Court fell into misapprehension of matters of fact and law, appearing upon the face of the record of this cause and said exceptions of defendant and arguments and briefs presented to this Court thereon, in the following respects and particulars, as evidenced by minute order made herein June 30, 1932, to wit:

1. That the Court so erred in finding that defendant infringes claim 1 of the Smith patent in suit.

2. That the Court so erred in finding infringement of claim 1 of the Smith patent in suit in the face of the clear evidence that defendant does not so order and arrange eggs within the incubator, the use of which is complained of, that definite currents of air first impinge upon the older and warmer eggs and thereafter progressively impinge upon eggs of lesser warmth and lesser

age until the youngest and coolest eggs are so impinged upon.

3. That the Court erred in finding infringement herein in the face of the clear establishment in the record of the fact that defendant does not employ the apparatus of the Smith patent in suit or any simulation thereof or any corridor with lateral egg chambers and curtains or partitions between said egg chambers and the corridor and a fan or air-driving device at the top of the corridor forcing the air downwardly through said corridor, and beneath said curtains or partitions, and thence upwardly through said lateral egg chambers, for partial venting and partial re-supplying with fresh air and for heating and humidifying at the top of the incubator, and prior to the intiation of a succeeding sequence of air movements as herein defined.

4. That the Court erred in finding infringement of claim 1 of the Smith patent herein in the face of the record fact that the eggs in defendant's incubator in the incubating chamber thereof are not moved until withdrawn to be placed in a separate hatching chamber, whereas pursuant to the Smith patent and claim 1 thereof and the use of the process of said claim, the eggs must necessarily be moved downwardly in the lateral incubation chambers, progressively, until placed in the lowermost position in which they are hatched.

5. That the Court erred in not finding claim 1 of the Smith patent in suit void as being merely for the function of the apparatus of the Smith patent in suit, which function cannot be performed without utilizing the structure disclosed, illustrated and described in said Smith

patent, and which structure defendant in no respect has used.

6. That the Court erred in not following the rule of comity with respect to the prior decisions of the Third, Sixth and Ninth Circuits, including Boling v. Buckeye, 33 Fed. (2d) 347, and Buckeye v. Boling, 46 Fed. (2d) 965, and Smith, et al. v. Jensma, etc., a case tried and determined in the District of Idaho in this Ninth Circuit and unreported, but copy of the opinion of which is on file in this cause.

7. That the Court erred in finding infringement of claim 1 of the Smith patent herein asserted in the face of all of said adjudications of said Third, Sixth and Ninth Circuits, in which no infringement of said claim 1 of the Smith patent was found save and except where defendants had employed an incubator with a central corridor and lateral egg chambers and curtains or partitions between said corridor and egg chambers, and definite currents of air forced downwardly through said corridor then laterally under said partitions and curtains and then upwardly through said egg chambers for progressive impingement upon eggs in said egg chambers arranged in accordance with the Smith patent requirements.

8. That the Court erred in according to claim 1 of the Smith patent in suit a scope and meaning entirely out of accord with the scope and meaning of claim 1 of the Smith patent as it reads and as limited by the file wrapper and contents of said patent and the prior art.

9. That the Court erred in according to claim 1 of the Smith patent in suit any such scope and breadth as to permit of any finding of infringement herein by de-

fendant in view of the concessions and admissions of plaintiffs in the record herein, and particularly in the depositions taken on behalf of defendant on reopening of this case, at Cleveland, Ohio, which of necessity so emasculate and limit said patent and claim 1 thereof that, assuming any invention or validity present, no finding of infringement, upon this further ground, is warranted.

10. That the Court erred in not limiting the Smith patent and claim 1 thereof, if valid, to the exact procedure and the use of the exact apparatus pictured, disclosed and described in said Smith patent whereby no infringement by defendant can result, and in such behalf departing from the clear holdings and rulings of the said prior adjudications of said Smith patent in the Third, Sixth and Ninth Circuits.

11. That the Court erred in finding infringement of claim 1 of the Smith patent in suit in the face of the justification of the defendant under subsequent patent to Robbins.

. . .

This petition is based upon Equity Rule 69 and the annotations thereto appearing in Hopkins Federal Equity Rules, Annotated, 7th Edition, and upon the papers, files, records, proceedings, briefs and exhibits, and transcripts of arguments before the Court, herein, and the findings and rulings of said minte order herein of June 30, 1932, and all said prior adjudications of said Smith patent in suit.

Raymond Ives Blakeslee,
Kelly L. Taulbee,
Solicitors & Counsel for Defendant

[Endorsed]: Service and receipt of 2 Copies of the within Notice and Petition for Rehearing is hereby admitted this 1st day of July, 1932. A. L. Ely Leonard S. Lyon by I. L. Fuller Attys. for Plaintiffs Filed Jul 2-1932 R. S. Zimmerman, Clerk By Theodore Hocke Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

REPLY TO AND MOTION TO DISMISS PETITION FOR REHEARING.

COME NOW the plaintiffs in the above-entitled cause, and in reply to the petition for rehearing filed herein by the defendant object thereto and move that the same be dismissed because the same was filed without leave of Court, is not accompanied by a certificate of Counsel or of the Defendant that the same is presented in good faith and not for the purpose of delay, and does not purport to show either newly discovered evidence or any manifest misapprehension on the part of the Court as to the law of the case or any mistake as to the facts involved. and although entitled a Petition for Rehearing is merely a request for a reargument of the same matters already fully argued in this cause.

"A new hearing should not be had simply to allow a rehash of old arguments. The proper remedy for errors of the court on points argued in the first hearing is to

be sought by appeal, when the decree is one which can be reviewed by an appellate tribunal. See Tufts v. Tufts, supra."

(GIANT POWDER CO. v. CAL. VIGORIT POWDER CO., 5 Fed. 197, 201 - Circuit Justice Field.)

"But I desire to say a few words on this occasion, as to rehearings of equity causes, in this court, upon the original evidence. They have been exceedingly rare in this court, I admit, as, in my judgment, they ought to be, unless some plain, and obvious, and palpable error, or omission, or mistake, in something material to the decree, is brought to the notice of the court, which had before escaped its attention. But if a rehearing were to be granted upon the mere certificate of counsel, who had argued the cause, that, in their judgment, the decree was erroneous, (a certificate, which, with great sincerity and readiness, would almost always be given by the counsel), it is obvious that in the great mass of equity causes of a difficult and important nature, in this court, depending upon conflicting views of law, and also upon conflicting, and often, irreconcilable evidence, a rehearing would be almost a matter of course; and considering the vast time occupied in hearing such causes, there would be little time left for the court to devote itself to any other business, and the other suitors in the court would suffer the most oppressive delays, and often, the most irremediable injustice. Besides, it is no small recommendation of our

practice, that it thereby requires, in the first instance, on the part of counsel, a thorough examination and preparation for the hearing; and on the part of the court, a most solicitous, and exact study of the whole cause, before the judgment is pronounced. The other course would encourage inattention or indifference, and induce the counsel, as well as the parties, to speculate upon contingencies, and to argue the cause at large, only, when the court had delivered the result of its opinion. On all these accounts, it has been the constant habit of the Supreme Court fo the United States, to refuse rehearings of any cause, after it has once pronounced its own judgment, whatever might be the conflicts in the evidence, or the differences among the judges themselves, as to the merits of the controversy."

(JENKINS v. ELDRIDGE, Fed. Cas. No. 7267, 13 Fed. Cas. 504, 506—Circuit Justice Story.)

"I have examined the petition for rehearing, and especially the brief of counsel for plaintiff, which is very elaborate and well gotten up, but which simply makes the questions which were made in the original hearing before me, which was argued at length by able counsel for several days, and especially with a perfect knowledge of the case and perfect familiarity with the law of the case by counsel for the plaintiff. As I have just stated, while it is considerably elaborated, there is nothing new in this motion for a rehearing. Every question made in it seems to have been passed upon by the court in disposing of the original case. There is not a single ground for rehearing which was not a ground presented for a right to a decree by counsel arguing the case originally.

The matters are presented in a somewhat different way probably, certainly somewhat more thoroughly than they were in the original briefs and argument; but there is not a new proposition, so far as I can see, in the motion for rehearing, or one that was not presented in the original case, certainly not a ground which is to me meritorious.

It is well understood, of course, that a motion for a rehearing should show either newly discovered evidence or some manifest misapprehension on the part of the court as to the law of the case or some mistake as to the facts involved. Nothing of this sort appears, so far as I can see, in this well-prepared brief of counsel acting for the plaintiff, or in the oral argument before the court. As stated, it presents the same questions heretofore thoroughly argued and very carefully considered by the court."

(SWANN v. AUSTELL, 257 Fed. 870 - D. C. N. D. GA.)

Respectfully submitted,

W. L. Ely
Leonard S. Lyon
Attorneys for Plaintiffs.

Los Angeles, California, July 11, 1932.

[Endorsed]: Received Copy of the within Reply to and Motion to Dismiss Petition etc. this 29th day of July, 1932 Raymond Ives Blakeslee By S. Ross Atty. for Defendant Filed Jul 29 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

At a stated term, to wit: The February Term, A. D. 1932, of the District Court of the United States of America, within and for the Central Division of the Southern District of California, held at the Court Room thereof, in the City of Los Angeles, on Tuesday the 2d day of August, in the year of our Lord one thousand nine hundred and thirty-two.

Present:

The Honorable Paul J. McCormick, District Judge.

SAMUEL B. SMITH ET AL., Plaintiffs,)
)
vs.) Q-69-M-Eq.
)
HERBERT H. WAXHAM, etc.,)
Defendant)

This cause comes on for hearing on petition for rehearing and for hearing on plaintiff's motion to dismiss same.

R. I. Blakeslee, Esq., and K. L. Taulbee, Esq., appear as counsel for defendant; and R. I. Blakeslee, Esq., makes a statement in support of petition for rehearing.

Leonard S. Lyon, Esq., of the firm of Lyon & Lyon, Esqs., appears for plaintiffs, and makes a statement.

Court orders petition for rehearing be denied, and an exception is noted.

L. S. Lyon, Esq., presents FINAL DECREE, which is signed by the Court, and ordered filed and entered herein, being as follows, to wit:

Decree * * * * * * * * * * * *

Objections of R. I. Blakeslee, Esq., overruled and exception allowed.

[TITLE OF COURT AND CAUSE.]

REPORTER'S TRANSCRIPT OF PROCEEDINGS ON PETITION FOR REHEARING.

APPEARANCES:

For Plaintiffs: Messrs. Lyon & Lyon, by Leonard S. Lyon, Esq.

For Defendants: Raymond Ives Blakeslee, Esq., and Kelly L. Taulbee, Esq.

LOS ANGELES, CALIFORNIA, TUESDAY, AUGUST 2, 1932.

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THE COURT: Smith v. Waxham.

MR. BLAKESLEE: Ready, if your Honor please.

MR. LYON: Ready, your Honor.

MR. BLAKESLEE: We do not bring this petition on the ground of newly-discovered evidence, your Honor, but we bring it because we think your Honor did not completely sense the meaning of the prior adjudications with respect to infringement, and that, whereas your Honor gave effect to the rule of comity with respect to validity, your Honor failed to recognize that every one of those prior adjudications limited the patent, in the two reported cases in which infringement had been found, Cooley and Wolfe, to the exact thing of Smith's patent, and that the same is true in the other cases in which non-infringement is found.

THE COURT: You discussed that very thoroughly, Mr. Blakelsee.

MR. BLAKESLEE: I did, your Honor, and it seems to me very considerate of your Honor to permit us to come here on this matter; but it seemed to me that your Honor had failed to sense the fact that the courts have all said that it is essential to infringement that the apparatus of the Smith patent be used, that is, the corridors and the curtains, and all that, with the fans above forcing the air down through the corridors, and mushrooming, and passing up through the eggs, the eggs being arranged in a particular way.

The Robbins incubator, used by the defendant, has simply an open chamber compartment, with some trays in it, and there cannot be the channel arrangement through which the air passes in the Smith patent in definite channels. The latest case is the Jensma case, up in Idaho, and there infringement was found, because they had used the same thing as the patent, and the decisions says so.

I have never brought a petition like this but once before, and that was in this court before Judge Bledsoe, and in that case he did reverse it. But I thought your Honor had inadvertently fallen into misapprehension of the facts in those cases, so that it would be only fair to the court as well as to the defendant to bring the matter up.

THE COURT: The memorandum clearly indicates the views of the court.

MR. BLAKESLEE: Yes. Your Honor says it is a close question as to infringement.

THE COURT: I still think it is.

MR. BALKESLEE: We think, however, that it is not close, based upon the prior adjudications. There has been no case either finding infringement or non-infringement where the defendant's structure was as far away from the Smith patent as is Robbins. Every one of them was much closer. Take the Hillpot case in the Second Circuit, and there they had the corridor, but the court found that they omitted the curtains, and therefore that they did not infringe; and so on through all the decisions. A definite path of air current and corridors are said to be the hallmark of the Smith invention.

THE COURT: I don't think I care to hear any more. I studied this case for two weeks, as far as it could be studied from the Master's report, read all of the evidence presented to the court, read your brief thoroughly, and you presented it in a masterly way.

MR. BLAKESLEE: Thank you.

THE COURT: And I was satisfied that the patent was valid; I had no doubt about that whatsoever. I think it has been adjudicated by courts of appeal. But I did have some doubt upon the arrangement or order, in the patent in suit.

MR. BLAKESLEE: How about the courses of the air currents? Those, of course, are as much essential as the orders of the eggs.

THE COURT: I don't think it is much use taking the time of the court further. We have decided this case once.

MR. BLAKESLEE: Yes, but did your Honor have time to thoroughly consider all of those prior adjudications?

THE COURT: We would not have decided it if we hadn't been satisfied.

MR. BLAKESLEE: I know that, your Honor, but I know the awful pressure your Honor is under, and it seems to me that, with all these machines that are imperiled, if they can't use these incubators, these poor farmers and this industry will be—

THE COURT: (Interrupting.) I think I would go to Congress on that.

MR. BLAKESLEE: Congress just refused to help the hatchery men, or at least the President. Now, I don't want to take the court's time, but if you Honor feels that there isn't any chance of us convincing you that this is a complete departure from the mode of operation of the Smith patent, there won't be any use talking further.

THE COURT: I am satisfied with the memorandum, Mr. Blakeslee. There is no reason for changing it.

MR. LYON: Your Honor, I have served on Mr. Blakeslee a form of decree and a form of order or findings of fact. Would your Honor prefer that we present the decree some other time?

THE COURT: What are the findings of fact?

MR. LYON: "It is hereby ordered that the report and supplementary report of the Special Master herein, supplemented by the minute order filed herein on June 30, 1932, be, and the same are, hereby adopted, made and used as the findings of fact and conclusions of law herein, and that the same be made a part of the record in this cause."

That is in accordance with the decision of our Circuit Court of Appeals.

MR. BLAKESLEE: We have no objection to the findings of fact and conclusions of law, but we have some objection to the draft of the decree which has been submitted.

MR. LYON: I have the decree here, and the order, your Honor.

MR. BLAKESLEE: As to the decree, if your Honor wishes—

THE COURT: (Interrupting.) Let me read it just a minute, Mr. Blakeslee, and I will hear you.

MR. BLAKESLEE: Yes, sir.

THE COURT: Yes. I will hear you, Mr. Blakeslee.

MR. BLAKESLEE: Our objections are, first, as to paragraph 1, the only claim which has been found to be infringed and which is before the court. Claim 2 was found not infringed by the Master, and your Honor confirmed that, so we ask, in paragraph 1, that it read, "that the patent is good and valid in law as to claim 1 thereof," simply limiting it to claim 1 in the first paragraph.

MR. LYON: The Master in his report held both claims 1 and 2 valid, your Honor.

MR. BLAKESLEE: That is all right, but I don't think that if any court passed upon it and found simply claim 1 infringed, that there should be any decree as to claim 2 at all. The bill is practically dismissed as to claim 2, should be; he finds that it is not infringed.

MR. LYON: I think the Master's report is in a separate book of this shape, your Honor. (Indicating.)

THE COURT: It seems to be, yes.

MR. LYON: It was in this form that we received it from the Master.

MR. BLAKESLEE: Yes. I think the Master did so find.

THE COURT: Proceed.

MR. BLAKESLEE: Our position is now, if your Honor please, when it comes to a decree, that it being in order really to dismiss as to claim 2, there being no infringement, that simply claim 1 should be adjudicated as valid and infringed. Claim 2 has been found not infringed, and the plaintiff is not entitled to an idle decree as to validity. We can't appeal from that, because the claim was found not infringed, and there is no reason for that being in the decree. Validity should only be found as to claim 1, which has been found infringed.

As to the second paragraph, we object to the matter starting at the end of the next to the last line, reading: "That said John L. Robbins has assumed, conducted and controlled the defense of this cause." Now, that is not proper, because, whatever the record may indicate as to his assisting his customer, the defendant, there is no such prayer in the bill of complaint, and it is immaterial, and it is not proper to be inserted in the decree. It is an attempt in some way to bind him by this litigation, when, as a matter of fact, he wasn't a party, and when, instead of suing Mr. Robbins back in Denver, which was closer to plaintiff's domicile than Los Angeles, they hurdled that district and came here and brought a suit against his customer. So we object to any inclusion in the decree of any reference to Mr. Robbins, as immaterial, and as not within the prayer of the bill of complaint.

Similarly as to paragraph 5, where the injunction is asked to be issued, as to the third line "and all in privity with the defendant." Now, the bill of complaint does not

ask any such thing. It simply asks that the employees, workmen, agents, attorneys, and, I think, too, associates, be enjoined, and that may be attempted to be stretched to include Mr. Robbins. It may be contended that he is in privity because he sold this machine to the defendant. That isn't within the bill of complaint; it isn't asked for, and shouldn't be in.

Those, then, are our objections, if the court please, and they are inconformity with the usual decrees in these matters.

THE COURT: Do you want to say anything, Mr. Lyon?

MR. LYON: Only to say that in respect to that portion of the decree reciting that John L. Robbins controlled and conducted the defense, that is in accordance with the record, and is so stated, I believe, in the Master's report, but I don't think Mr. Blakeslee challenges that that statement is fully supported by the record, and is in accordance with the fact. So far as reciting that in the decree is concerned, I have argued that out with Mr. Blakeslee before, before other judges, and it has been quite the uniform practice that where a manufacturer assumes the control of the defense of the case, to so recite in the decree. That is the practice here and in San Francisco, and there is a case specifically in point in 25 Fed. (2d), 659. The purpose of that is so that there can never be any later issue on that particular point, as to whether the manufacturer did control the defense in the case. In this particular case here it was stated on the record, made of record before the Master, at page 28 of the record in this case, that Mr. Robbins was defending and

conducting the defense of this case and was the actual defendant in interest.

THE COURT: Well, I think there is something here, especially in view of the decision of the Circuit Court of Appeals of the Tenth Circuit, Judge Lewis' decision, I think.

MR. BLAKESLEE: Yes, sir.

THE COURT: I think the matter ought to be left open. There is language in that decision that I think should not be foreclosed, at least by a persuasive decree in this circuit. There is a good deal in what Mr. Blakeslee said, that probably if there is an effort made to bring a case against the manufacturer, probably it had best be brought in that jurisdiction. The court here is concerned with a specific device, a specific incubator, out here in the Van Nuys district.

MR. LYON: I think that is correct, your Honor, and I don't think it is absolutely necessary in the decree. We can always establish the fact by the record.

THE COURT: I think it ought to go out.

MR. BLAKESLEE: There is one other thing that I omitted. In paragraph 5, where it reads in the last line: "Patent No. 1262860, particularly claim 1 thereof, as follows," I think that should read, "to-wit, claim 1 thereof," because that is the only claim that is concerned.

MR. LYON: I don't object to that correction, your Honor.

MR. BLAKESLEE: That is line 18 of the second page of the draft. That follows the objection we make as to the second line of the first paragraph.

THE COURT: Let me have that again.

MR. BLAKESLEE: Line 18 of the second page, which is the last line of paragraph 5, before "claim 1." Mr. Lyon seems to have no objection to it stating "to-wit, claim 1 thereof, as follows," instead of "particularly." That is the only claim that is concerned.

THE COURT: Yes. I think your suggestions are proper, Mr. Blakeslee.

MR. BLAKESLEE: Thank you. And also as to the first paragraph?

THE COURT: Yes.

MR. BLAKESLEE: As to claim 1 thereof only?

THE COURT: Yes. It will read now that:

"It is hereby ordered, adjudged and decreed as follows:

1. That the Smith patent in suit, No. 1262860, is good and valid in law, particularly as to claim 1."

MR. BLAKESLEE: Leaving out the word "particularly" was what I asked. Just as to claim 1 thereof.

THE COURT: That is true. I think that is unnecessary. If the court holds a patent valid, that is all that is necessary.

MR. BLAKESLEE: But claim 1 is the only claim before the court.

THE COURT: Well, I will strike out the word "particularly."

MR. BLAKESLEE: As to claim 1 thereof. It is singular as to the claim.

THE COURT: And let it read: "and as to claim 1 thereof."

MR. BLAKESLEE: Then as to the fifth paragraph, if you Honor please.

THE COURT: Now, the second paragraph reads as follows: "That the defendant Herbert H. Waxham, do-

ing business as Waxham Hatcheries at Van Nuys, California, has infringed claim 1 of the patent in suit by the use of an incubator, known as the Robbins incubator, manufactured and sold or furnished to the defendant by John L. Robbins of Denver, and Edgewater, Colorado, doing business under the name of Robbins Incubator Co." The rest of it goes out.

Third: "That the defendant has not infringed claim 2 of the patent in suit."

Fourth: "That at the time of filing the bill of complaint herein, the title to the patent in suit was in the plaintiff Samuel B. Smith, and that the plaintiff, The Buckeye Incubator Company, held an exclusive license to manufacture within certain limits under said patent."

MR. LYON: There has been no issue about that.

MR. BLAKESLEE: Yes. No issue about that.

THE COURT: Fifth: "That an injunction be issued out of and under the seal of this court, directed to the defendant, his employees, workmen, agents, attorneys, enjoining and restraining them during the remainder of the term of said Letters Patent No. 1262860 from using or causing to be used the process claimed in said Letters Patent No. 1262860, to-wit, claim 1 thereof, as follows:" Then follows the claim.

MR. BLAKESLEE: We have no objection to that "and each of them" in line 15. That is all right.

MR. LYON: That does not need to be in.

MR. BLAKESEE: Yes. That is all.

THE COURT: There is no objection to the rest of it?

MR. BLAKESLEE: No, no objection to the rest of it.

THE COURT: It probably should be endorsed to comply with rule 44, gentlemen.

MR. BLAKESLEE: The minute order will show that the decree was signed here, with our objections?

THE COURT: Very well.

MR. BLAKESLEE: I presume the order will be that the petition for rehearing is denied. And may we have an exception noted to that?

THE COURT: Yes. That will be the order. And an exception may be noted.

[Endorsed]: Filed Aug 9 1932 R. S. Zimmerman, Clerk By C. A. Simmons Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

ORDER ON FINDINGS OF FACT AND CONCLUSIONS OF LAW.

IT IS HEREBY ORDERED that the Report and Supplemental Report of the Special Master herein, supplemented by the Minute Order filed herein on June 30, 1932, be and the same are hereby adopted, made and used as the Findings of Fact and Conclusions of Law herein and that the same be made a part of the record in this cause.

Dated, August 2nd, 1932.

Paul J. McCormick
U. S. District Judge

[Endorsed]: Filed Aug 2 1932 R. S. Zimmerman, Clerk By B. B. Hansen, Deputy Clerk

[TITLE OF COURT AND CAUSE.]

FINAL DECREE.

This cause having been heard and considered upon the record filed herein, the original and supplemental reports of the Master, David B. Head, Esq., appointed to hear the evidence and to make findings and recommendations thereon, and the same having been considered upon arguments by counsel upon exceptions to said reports and briefs thereon, and the Court having made and entered its Order on Findings of Fact and Conclusions of Law herein, IT IS HEREBY ORDERED, ADJUDGED AND DECREED AS FOLLOWS:

1. That the Smith patent in suit No. 1,262,860 is good and valid in law, ~~particularly~~ as to claims 1 ~~and 2~~ thereof ~~thereof.~~ [PJM J]

2. That the defendant Herbert H. Waxham, doing business as Waxham Hatcheries at Van Nuys, California, has infringed claim 1 of the patent in suit by the use of an incubator, known as the Robbins incubator, manufactured and sold or furnished to the defendant by John L. Robbins of Denver and Edgewater, Colorado, doing business under the name of Robbins Incubator Co.; ~~that said John L. Robbins has assumed, conducted and controlled the defense of this cause~~ [PJM J]

3. That the defendant has not infringed claim 2 of the patent in suit.

4. That at the time of filing the Bill of Complaint herein the title to the patent in suit was in the plaintiff Samuel B. Smith, and that the plaintiff The Buckeye Incubator Company held an exclusive license to manufacture within certain limits under the said patent.

5. That an injunction be issued out of and under the seal of this Court, directed to the defendant, his employees, workmen, agents, attorneys, ~~and all in privity with the defendant, and each of them~~ [PJM J] enjoining and restraining them during the remainder of the term of said Letters Patent No. 1,262,860, from using or causing to be used the process claimed in said Letters Patent No. 1,262,860, ~~particularly~~ towit claim 1 thereof, as follows:

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

6. That plaintiffs having waived an accounting by and any recovery from Herbert H. Waxham, defendant herein, of the profits realized by said Herbert H. Waxham, or any damages from his (Herbert H. Waxham's) infringing acts, excepting nominal damages and their costs of suit, plaintiffs have and recover judgment against the defendant, Herbert H. Waxham, for one dollar ($1.00) nominal damages and for the sum of Sixteen Hundred Eighty-Six & 67/100ths ($1686.67), plaintiffs' costs and disbursements herein to be taxed by the Clerk.

Dated: August 2nd 1932.

Paul J. McCormick
United States District Judge.

APPROVED AS TO FORM:

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Attorneys for Defendant.

Decree entered and recorded AUG-2 1932

R. S. ZIMMERMAN Clerk
By B B Hansen
Deputy Clerk,

[Endorsed]: Filed Aug-2 1932 R. S. Zimmerman, Clerk By B B Hansen Deputy Clerk

IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
CENTRAL DIVISION

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY,	)	
Plaintiffs,	)	
vs.	)	In Equity No. Q-69-M
HERBERT H. WAXHAM (doing business as Waxham Hatcheries),	)	
Defendant.	)	

CONDENSED STATEMENT OF EVIDENCE PURSUANT TO EQUITY RULE 75, FOR PRINTED TRANSCRIPT OF RECORD ON APPEAL.

It appears herein that plaintiffs moved the Court "to refer the above entitled cause to a special master to take and hear the evidence offered by the respective parties and to make his conclusions as to the facts in issue and recommend the judgment to be entered therein, subject to full review by the Court," and, in support of said motion, presented the affidavits of certain parties. Defendant appeared, objected to and opposed the motion,

and, likewise, filed certain affidavits. After hearing counsel for the respective parties, the Court entered an order allowing plaintiffs' motion and referred the cause to DAVID B. HEAD, ESQ., as Special Master, with an exception to defendant.

On March 25, 1930, the trial proceeded before the Special Master and continued without interruption to and including March 31, 1930.

Thereafter, upon motion and showing, presented by new patent counsel for defendant, and over the opposition of plaintiffs in open court, it was Ordered that the cause be reopened for the taking of further proofs, and, pursuant to which Order, additional proofs were adduced, and all of which shall hereinafter be more explicitly set forth, referred to and explained.

Opening statements were made by counsel for the respective parties, and counsel for plaintiffs stated that plaintiffs would rely upon claims 1 and 2 of the Letters Patent in suit.

Plaintiffs then offered the following Exhibits, all of which were admitted and received in evidence: As plaintiffs' Exhibit No. 1, a copy of the Smith patent in suit, No. 1,262,860, dated April 16, 1918; as plaintiffs' Exhibit No. 2, the original assignment of the Smith application, then pending, to the Buckeye Incubator Company; and as plaintiffs' Exhibit No. 3, the original assignment, dated April 29, 1927, re-assigning the patent in suit from the Buckeye Company to Dr. Smith.

Attorney for the defendant (Mr. O'Brien) stated in answer to questions by attorney for the plaintiff that John L. Robbins of Denver and Edgewater, Colorado is

employing counsel and to that extent he is conducting the suit. Robbins' company is the Robbins Incubator Company.

JOSEPH I. TAGGART,

called as a witness on behalf of plaintiffs, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. ELY

I am 42 years of age and reside in Cleveland, Ohio, where I am service and assistant general manager for the Smith Incubator Company which manufactures mammoth incubators under the Smith patent in suit.

I graduated with high honors in Zoology from Ohio Weslyan University, where I devoted most of my time to embryology and conducted experiments with a small incubator. During that period a great deal of my studies were conducted with a small incubator and hen's eggs.

When I became an assistant in that department I looked after the laboratory incubator which we operated part time. Early in 1923 I became associated with Dr. Smith, and since then have devoted my time almost entirely to the hatching industry. I started in as a salesman but late in 1923 was placed in charge of flocks and selling baby chicks for the Smith Standard Company, then owned by Dr. Smith, and which was one of the largest hatcheries in the world, with over a million egg capacity. I was sales and general manager of that plant, where we used Smith incubators for four years, and until it was sold out because of its interference in

(Testimony of Joseph I. Taggart)

the field with the Smith Incubator Company. My duties required me to investigate all types of incubators and methods of incubation used in various parts of the United States. This work took me into every State of the Union. Since the Smith Standard Company was closed out I have devoted my entire time to the Smith Incubator Company; and at the present time I am service manager in charge of the erection of the incubators and servicing them to see that they operate properly and at the same time I am assistant general manager of the factory.

In respect to the process of incubation and development of the chicken from the egg, the latter consists largely of three parts, the yolk, white and shell. The female germ is a very small spot which floats on top of the yolk, no matter which way the egg is rolled. This germ is always fertilized within the hen, with the male germ meeting the female germ and starting development. By the time the egg is laid, the embryo is approximately the size of a small pea in diameter. If the egg is chilled, embryonic development stops or is retarded but starts up again immediately the egg is brought back to proper incubating conditions. The spot on the yolk continues to grow, using as its food the white of the egg, which has been practically assimilated by the end of the seventeenth day. During this time the yolk has been hanging outside of the embryonic chicken in the form of a sack, but on the nineteenth and twentieth days the chick starts to pull this into its body and when hatching occurs, the yolk is still half its original size and is drawn within the chick. This is still used as food. The chick does not eat very much the first 48 to 72 hours, by which time

the yolk is entirely assimilated. In order to carry out this development it is necessary that you maintain a proper temperature and within very close limits. Proper moisture content around the egg is also necessary, because the egg is well over fifty percent water and the shell is porous. If dry air is maintained around the egg at all times, it will evaporate too rapidly, and the result will be either very poor chicks or a dead embryo before the twenty-first day. Throughout this development, with the exception of the first few days, a great deal of animal heat is generated.

I have here a chart illustrating that matter of the development of the heat. It contains three curves plotted to show the development of heat, consumption of oxygen and the carbon dioxide developed on each of the 21 days of incubation. No heat is developed the first four days. In fact, some of our tests show that some heat is used up during that period. Gradual heat is developed from the fifth day onward, and which is partially offset by the evaporation of water from the egg. The heat becomes quite noticeable the tenth or twelfth day and offsets the cooling effect of the evaporating water. This chart shows the development of the heat in what is known as large calories, each of which contains 1,000 of the small calories and is practically four British thermal units. On the seventeenth day there is a development of 2½ calories of heat and at that time the curve flattens, due probably to the change of the embryo food diet. From the end of the eighteenth to the twenty-five day, the heat development is very rapid, when on the latter day each chick generates five calories of heat.

(Testimony of Joseph I. Taggart)

I prepared this chart personally and got my information from studies with calorimeters.

Underneath the heat unit line is a top dashed line which represents the amount of oxygen consumed each day and the lower dashed line represents the carbon dioxide given off. These two lines are not only parallel but should be superimposed, as they are almost exactly the same.

(Whereupon the above referred to chart was offered as Plaintiffs' Exhibit No. 4 and was admitted and received in evidence over the objection of counsel for defendant upon the ground of its being immaterial).

I was familiar with the practice of artificial incubation prior to 1915. The practice of incubating eggs prior to the Smith invention was that in 1915 the various incubators consisted of small sections, the largest of which contained perhaps 500 eggs, although the customary ones in use contained from 150 to 300 eggs, which were set at one time and all arranged at one level. They had heating units in the top and fresh air was admitted at the bottom. They were seldom over 12 inches in height and the eggs were all laid on their sides and required plenty of space. Heat being generated at the top and fresh air brought in at the bottom, the heat was conducted by convection currents or radiation only, with the result that the temperature at the top of the egg was generally from four to six degrees higher than that at the bottom of the egg, which was, therefore, not subjected to uniform air temperature on all sides. The operator necessarily had thermometers and thermostats in each unit, with special ventilation and special moisture pans therefor. It was not considered advisable, in fact

(Testimony of Joseph I. Taggart)

it was considered very inadvisable to have any drafts through the incubators because "they couldn't control the temperatures in the different parts if they did. The temperature would not be uniform." In fact, it was considered advisable to have no drafts through the room. The custom in commercial hatcheries was to tier or connect a number of these small incubators together like sectional book cases. In some hatcheries there would be only one layer of incubators and in other hatcheries they would deck them two or three high, but no higher in 1915 to my knowledge, although since that year there have been some four or five tiers or decks brought on to the market. With one layer of incubators a room of this size, which is about 24X24, would hold 10,000 eggs, but with three decks of incubators, might hold in a crowded condition twenty-five to thirty thousand eggs.

Under such an arrangement a room would have one thermometer, one thermostat and one set of ventilating openings on the average for each 150 to 300 eggs.

In such units, popularly referred to as the still air type, the air was "still air" and convection currents were the sole means of transferring air from one part to another. Each unit contained one layer of eggs.

If two layers of eggs had been used, uniform temperature could not have been maintained due to the method of heating them whereby heating units were above the eggs and cool air brought in at the bottom, and which created an uneven temperature above and below the egg layer. In the case of two layers they could not be maintained at uniform temperature at all and there would be as much as three to four degrees difference between each

(Testimony of Joseph I. Taggart)

layer. The skilled hatcheryman got very good results with these still air machines of the prior art. It depended largely upon the skill, time and study devoted to it. In 1915 a fifty percent hatch was considered as good as could be counted on, although it was customary for them to obtain from fifty to sixty percent hatches. It was necessary to study the incubator and conditions. It was a very pronounced fact that you never knew from one hatch to the next what results you were going to have, and sometimes one would obtain splendid results and sometimes very ordinary results.

I have testified in several suits involving this Smith patent and I am familiar with it and its mode of operation, which latter involves a closed cabinet wherein thousands of eggs are placed in superimposed tiers in one chamber and controlled by one set of instruments, which results in decided saving in labor and expense of operation and makes possible uniformly good hatches all the time for the unskilled operator. In this method all eggs are not set at one time. It is customary every three or four days to set one-sixth to one-seventh of the volume of the incubator, so that by the time capacity is reached the incubator contains eggs freshly set, eggs in various stages, and eggs in the hatching condition. Eggs just set must be maintained at not less than 100° temperature and the hatching eggs must be held down to at least 105° or slightly below. The inventor has stated that the temperature of the circulating air should prevent the eggs in the earlier stages of incubation from falling below 100° and that the speed and velocity of the circulating air should be such as to carry the heat away from the

(Testimony of Joseph I. Taggart)

eggs in the latter stages of incubation and thereby hold the temperature of those eggs at 105° or slightly below.

I will read at the bottom of the first column on page 1 of the patent: "It is manifest that the temperature will remain practically the same throughout the column of eggs but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation."

Reading from line 73: "It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°." The earlier description means that this 100° and 105° is the temperature within the eggs themselves. In the device that Smith has set up as a preferred form for carrying out this method and apparatus, there are eggs arranged in superimposed columns; there is a place at the top of these columns for placing the fresh eggs which are lowered from time to time into the turning racks, and fresh eggs set above in the spaces originally occupied by them. These eggs by the eighteenth day have reached the hatching trays at the bottom of Figure 3 and Figure 1.

"In the top of this incubator there is a fan so arranged as to force the air downward to the bottom of the incubator, where it divides, going amongst the hatching eggs and then up through the various other eggs. In this means the heat from the hatching eggs will be conveyed to the other part of the incubator. At the top of the incubator this air, or most of it, is brought back to the fan again and is recirculated time and time again in

(Testimony of Joseph I. Taggart)

continuous cycles. At the top of the incubator they have arranged heating coils and also moisture jets. This is to supply the moisture, or I mean to supply the heat and to supply a certain amount of moisture for the fresh air."

At the top is also a restricted opening to permit the entrance of fresh air with corresponding openings for the exhaust of foul air. The amount of fresh air entering the incubator is less than 3% of the air that is going continuously through the fans and around through the various cycles and only a small amount of fresh air is necessary at each time in order to maintain proper moisture, which is desirable because if large volumes of fresh air are brought in, the eggs become dried out to such an extent that the embryo is damaged, if not killed, before it reaches the twenty-first day.

"Q Will you go ahead and describe now any other parts of the apparatus?

A. On the sides of this central chamber there are curtains that are so arranged that the air will reach the hatching eggs. These curtains are merely a device that is used by Dr. Smith in connection with a current of low velocity and low volume or a small body for insuring the air to reach the hatching eggs so that it will pass through there as described in the patent. As the patent describes, the same result can be obtained by operating the fans at such a speed that they will cause this air to circulate and accomplish the same results. But, as stated before, these curtains are merely a device used by Smith in connection with a low velocity and low volume of air."

(Testimony of Joseph I. Taggart)

As I stated before, eggs in various stages of incubation develop heat, and once in operation the eggs in the advanced stage develop practically all the heat that is necessary to continue incubation. Once the incubator has become filled, no great quantity of heat need be added to continue the incubation, although it is customary to have small heating elements for the purpose of adding enough heat to maintain a balance or to keep the temperature as it should be.

"Q What effect do eggs, some in the more advanced stages of incubation and some not quite so far along and fresh eggs, have on the body of moving air?

A The eggs in the advanced stage naturally give off heat and those in the lesser stages assimilate it because it is necessary to have that heat to carry out the process of incubation."

I am familiar with the commercial incubators manufactured and sold under this patent.

I am handed a drawing, which represents a cross section of the Smith commercial incubator, which is diagrammatic and leaves out certain parts that would necessarily confuse if shown in correct cross section. This shows the arrangement of the fan, eggs, hatching trays at bottom, eggs arranged at different levels and the "currents of air that are forced downward to the floor where they divide, passing in amongst the eggs in the latter stages of incubation and necessarily conveying the heat of those eggs to the rest of the incubator for the purpose of incubation. In this drawing it differs somewhat from that in the suit, that is, from the patent, in that the curtains have been shortened, permitting a good

(Testimony of Joseph I. Taggart)

volume of air to pass above the hatching racks instead of forcing it all through the hatching racks."

Likewise the turning device that is used here is slightly different from that described in the patent, and is covered by a later patent and is considered an improved device whereon fresh eggs are placed immediately instead of being placed in a horizontal plane for the first few days.

Upon objection of counsel for defendant to evidence adduced bearing any relation to the drawing above discussed upon the grounds that same departs from the disclosures of the patent, the Master said:

"It will be understood that any evidence relative to this is not amplifying in any way the disclosures of the patent.

MR. ELY: Oh, no.

THE MASTER: But it may be used for the purposes of illustration. If there is some question as to the commercial success or the utility of the device, this may be received on that particular issue.

MR. ELY: I take it, your Honor, in so far as the commercial machine and the patent embody the same principle that we may consider this. Is that correct?

THE MASTER: Yes. With that understanding the objection is overruled."

To which ruling counsel for the defendant requested an exception:

Whereupon witness resumed:

I personally superintended the preparation of this diagram. At different points throughout the incubator we have arrows showing the direction of currents, and we

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have placed on there numbers which give the approximate lineal feet per minute of the air current at that point. I made such calculations with the use of an anemometer.

Whereupon plaintiffs offered the diagram above discussed as Plaintiffs' Exhibit No. 5, which was admitted and received in evidence for the purpose of illustrating the witness' testimony.

The commercial name of the incubator I have been discussing and which is illustrated in exhibit No. 5 is "The Smith Incubator" which is made by the Smith Incubator Company at Cleveland.

I am familiar with the so-called Buckeye incubators which are manufactured under the Smith patent, said company operating under an exclusive license from Dr. Smith to manufacture incubators up to a certain size, which is at the present time 16,500 eggs. Dr. Smith manufactures sizes from 25,000 up, and at present manufactures but two sizes, one of which contains 30,000 eggs and the other 52,000 eggs, being called respectively the Smith Junior and the Smith Senior.

I am familiar with the construction of the Buckeye incubators and have some catalogs here showing such construction.

"Q Will you point out just briefly the distinction between the Buckeye incubator and the Smith? You might take page 15."

(Objection was offered by counsel for the defendant to the above question upon the ground that any distinctions between the Buckeye and the Smith incubators are

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immaterial and the patent is the only thing germane to this cause.

"THE MASTER: It would seem there could be no objection to pointing out the differences between the Buckeye and the Smith patent since we have already gone into the other differences. The objection is overruled."

Whereupon the witness resumed.)

There are two illustrations, pages 10 and 20, showing the Buckeye incubator in partial sections, which show the fan arranged to circulate the air in cycles similar to the arrangement in the Smith incubator. The heating elements are below the fans instead of above. The turning device used is similar to the turning device in the patent, with the exception that the upper trays are included in the turning device, with the fresh eggs placed directly therein and not in the horizontal trays as first stated. The hatching trays are arranged at the bottom and are accessible from the two doors in the sides of the incubator. All of the eggs are reached through doors in the sides and not through any central corridor or arrangement. By "turning device" I mean the tilting egg racks.

(Whereupon counsel for plaintiffs proposed that the Court inspect a Smith incubator in use at Van Nuys by a man named Hewitt, and also a Buckeye incubator near-by, which proposal the Master accepted and agreed also to inspect the defendant's machine at a later date.

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Whereupon a recess was taken and the Master, counsel and parties in interest met at the Hewitt hatchery on Oxnard Street in Van Nuys, at which time Smith incubators were demonstrated. The party then proceeded to the Best O' Care Hatchery, in Roscoe, where another demonstration was given of a Buckeye incubator.

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I am familiar with the construction of the Buckeye Company's commercial incubators and their method of operation, and the catalog, marked for identification as plaintiffs' Exhibit No. 6, correctly shows the Buckeye incubators manufactured and sold under the patent in suit.

(Counsel for plaintiffs then offered the above referred to catalog as plaintiffs' Exhibit No. 6, and which was admitted and received in evidence over the objection of counsel for defendant, saving an exception to defendant.)

(The witness resumed:)

If a Smith incubator were filled with eggs all at one time, a large heating unit would be necessary to bring it up to temperature, and in the latter week of hatching it would be difficult, if not impossible, to control the temperature and to keep it cooled down for the proper heating conditions. The eggs when placed in the incubator in staged incubation have a stabilizing effect and keep the temperature of the machine approximately the same without the addition of extra heat. It acts as a reser-

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voir of heat and will hold for quite a considerable period with very little change in temperature.

"Q What part does the forced draft play in this?

"A It conveys the heat from the eggs in the later stage of incubation to the rest of the machine, where it helps in keeping warm the eggs in the earlier stages of incubation."

I should refer to the advantages in the Smith incubator with regard to cracked or spoiled eggs. If an egg becomes cracked in the still air type machine, it is very liable to rot, and generally does, while in the forced air type machine such as the Smith the rapidly moving air about the egg dries it down so that we are not bothered with rotting eggs in that type of machine. In the still air type the rotting of eggs presents quite a problem, and thus eggs must be found and removed from the machine, which is not done with the Smith incubator.

I have already spoken of the precautions which were taken by incubator operators in defending the incubators against drafts, and that prejudice exists today in certain parts. To illustrate, large quantities of eggs have been hatched by artificial incubation for the last 30 years at Petaluma, California, where they are very much prejudiced against the forced draft type of incubator as they believe that good chicks cannot be hatched in a fast moving or even a slow moving current of air, and that drafts of any description over the eggs are not desirable. It is an old idea that drafts were detrimental to which they still cling in that section.

The air in the Smith incubators follows a vertical direction in moving through the eggs and proceeds from the

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floor to the ceiling of the machine. This is a draft produced directly by the fan but does not move through the eggs until on its return movement toward the fan. It is, of course, an induced draft that goes through the eggs.

"Q Is there any advantage in an induced draft?

A An induced draft distributes itself more uniformly throughout the mass of eggs and makes more uniform results through there than if it was impelled directly from the fan."

As to the manner in which moisture is conserved: The egg is well over 50% water. It is necessary for this to evaporate to a small extent. If you allow the egg to evaporate beyond a certain percent, the result is an inferior chick, and if the drying out process is carried too far, the embryo usually dies before the twenty-first day.

By the term conservation of moisture in the operation of the Smith incubators is meant keeping the air in such a condition that it will not dry the chicks or eggs out too rapidly, and that is accomplished in the patent by restricting the volume of fresh air that enters the machine.

The percentage of hatch obtained in the Smith incubators of the type covered by the Smith patent varies with the time of the year and the condition of the flocks, but hatcherymen usually expect a seasonal average in the neighborhood of 70%, although some of them will average as high as 75% of all eggs set.

My attention is directed to the curtains 3 and 4 of Figure 1 in the Smith patent, which extend to the top of the hatching racks. The relative size of the fan

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shown in the patent is small when compared with the fans that are in use at the present time.

In the Smith incubator which we saw yesterday at Van Nuys, the curtains reach approximately to 5 inches from the top of the hatching racks. There is a relation between the size of the fan and the extent of the curtain. By increasing the size of the fan so that there is a larger volume of air moving towards the bottom of the incubator, it is unnecessary to have the curtains as long, and in that way they do not direct as much of the volume of moving air to the hatching racks.

I have before me a copy of Plaintiffs' Exhibit No. 5, which is a diagram labeled "Diagrammatic Cross-Section of the Smith incubator", which illustrates the paths of the air current.

Whereupon counsel for plaintiffs stated the following question:

"Q Will you please describe, for the purpose of the record, the movement of the air currents and their velocities as you have found them to be?" To which said question counsel for defendant duly objected upon the same grounds as originally made to the introduction and acceptance of said exhibit in evidence, and which said objection was overruled by the Master, with exception to the defendant.

The witness resumed:

"A The air is propelled downward by the fan at the top of the incubator to the floor, where it mushrooms and turns to the right and left, passing underneath the hatching racks, and over the top of the hatching racks,

and thence up through the eggs, and a good proportion of it is returned to the fan for the next cycle."

The speed of the fan air as it leaves the fan is approximately 1200 feet per minute, its speed when it enters the region of the hatching trays is approximately 250 feet per minute, its speed up through the hatching trays is from 20 to 40 feet per minute, its speed up through the tilting trays varies from 50 or 60 to as high as 150 feet per minute, where, although the general direction is always the same, the speed is not always constant at any given point, and the speed of the air as it returns to the fan where it crosses the beams at the top is approximately 500 feet per minute.

The curved lines at the upper corners of the central portion of the figure and at the center of the bottom represent eddies or swirls in the air current, or in the air movement.

Each fan in the Smith incubator develops less than 1500 cubic feet per minute, that is, moves less than 1500 cubic feet per minute when running free, which I have determined by tests both at the factory and in incubators.

Referring to our inspection trip of yesterday, we first visited the Hewitt Hatcheries at Van Nuys, where we saw three Smith incubators, two of which were of 47,000 egg capacity, the interior of which we inspected, and the third of 52,000 egg capacity. I measured and observed the direction of the air movements in those Smith incubators yesterday and they were approximately the same as to the general movement of the air about which I have just testified. I did not measure or record the

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speeds of the various fans in those incubators yesterday, but I did the day before and found that they corresponded very closely to the figures which I have given. One-half minute tests were made of the fans, which indicated they were moving from thirteen to fourteen hundred revolutions per minute, which corresponds very closely with the testimony I have just given. It is possible to get slight variations, but the speed of the air currents corresponds very closely.

I drew back the curtains on one side of the machine yesterday, which I also tested prior to yesterday. and found that the general air movement was the same as to any effect the curtains had on the movement of the air curtains through the eggs, but the speed of the air through the lower part of the incubator was reduced. These incubators which were inspected yesterday were in a room approximately 45 feet long and 20 feet wide. That room was built for the old type incubators, of which it held 40 in number of a capacity of 540 eggs each.

While there yesterday I detached a patent plate from one of the Smith machines, which indicates that it was made and sold to Hewitt in 1924, and is the same patent plate that was put on machines in that year, and the Smith incubators have been marked patented as shown on that plate from the very beginning in 1922.

Whereupon counsel for plaintiffs offered the patent plate above referred to as Plaintiffs' Exhibit No. 7, which was admitted and received in evidence.

After completing our inspection at the Hewitt hatchery, we proceeded to Mr. Beacham's hatchery, called the

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Best O'Care Hatchery, on San Fernando Boulevard, north of Burbank, where we saw in operation six No. 46 Buckeye incubators, each with a rated capacity of 16,100-odd eggs.

In both the Hewitt and Beacham hatcheries commercial hatching was in progress, and it wasn't simply a matter of demonstration.

At the latter hatchery the Buckeye machines were marked "patented" and have been so marked since the fall of 1923 or the spring of 1924.

In the first week of November, 1929, I visited the hatchery operated by the defendant Herbert H. Waxham, and observed that he was using a No. 23 Robbins incubator and two or three Petersime incubators. I observed the operation of the Robbins machine during that visit and discussed the matter with Mr. Waxham. As to any comparison between the machine I saw at the Waxham hatchery and the machine illustrated in the Robbins catalog B at pages 12 and 13, I would say that the one on page 12 has the appearance of being a No. 23 incubator. The illustration on page 13 simply represents the hatching racks and the incubating racks removed from the incubator.

I observed the details of this machine as to the fans which were the same as those fans appearing in the back of the picture on page 12, and also with the fans as shown on page 11 of the catalog. The incubator which I saw at the Waxham plant was filled with eggs. The incubating compartment, or that part which is equipped to turn the eggs, was completely filled and the hatching

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racks were filled with trays, although not entirely filled with eggs.

The hatching racks are the horizontal racks that are placed to the left of the turning racks, and the other racks in the machine that are pivoted on a central shaft for turning are meant to hold the eggs during the first 18 days of incubation.

The latter named racks are placed so that the slats or tray-supports are horizontal, as shown on page 12, for placing the egg trays into the racks. After they are once placed in there, the rack is then kept in a tilted position, as represented on page 13, which is approximately at a 45° angle from horizontal, being first to the back and then to the front, that is, tilting the top to the back and then bringing it to the front.

I observed that Waxham had set his eggs at different times in this incubator, which I could tell by the labels that were on the trays, and I discussed the matter with Mr. Waxham, who was hatching eggs at that time, which eggs were over in the racks at the left hand side of the picture as we see it.

Whereupon counsel for plaintiffs then offered as Plaintiffs' Exhibit No. 8 the Robbins catalog above referred to, and which was admitted and received in evidence, with the statement from counsel for defendant that while same was admitted to be a Robbins catalog it was not admitted to disclose with accuracy and exactness, and as to which the following discussion took place:

"MR. L. S. LYON: I think that is true in every case, with catalogs.

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THE MASTER: It is probably true of all catalogs. It will be Plaintiffs' Exhibit No. 8."

Approximately one-sixth of the egg capacity of the drum or turning racks in the Robbins incubator at the Waxham hatchery had been set at one time. It was impossible to make an accurate check on that because almost half of the trays were concealed behind the front trays. I checked this matter with Mr. Waxham but did not count the number of trays that had been set at any one time.

I am familiar with the instructions which Mr. Robbins sends out as to the placing of the eggs in the tilting racks, and which said instructions for this type incubator are at the top of the back cover page of the catalog.

As to the manner in which the trays and the tilting racks at the Waxham hatchery were arranged with respect to each other, I could only observe the front of the turning rack. The trays there were arranged so that two or more, approximately three, trays at a level clear across were of the same stage or the same age eggs. I do not remember whether the oldest eggs were near the center or near the top. As Mr. Waxham explained to me, it would not be possible to have the same stage eggs of incubation at the same point at all times, that is, with the method that he explained to me, because they were placed in the drum in one place and left there until the eighteenth day and after those were taken out and placed in the hatching racks, then their place was filled up with fresh eggs again and the successive places would hold eggs of the different stages during the three weeks

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of hatching. That was the method which Mr. Waxham explained to me.

Since my visit to Mr. Waxham's plant I obtained a No. 23 Robbins incubator similar to the one seen at the said plant and experimented with it at our factory in Cleveland, where we operated and hatched eggs in it for approximately 8 weeks. During that operation we filled it up in the regular manner and I observed the temperatures in the racks at various points and measured and determined the air currents and their direction, and also made some diagrams illustrating my findings.

The first photograph that I have here, which we will call "A", shows the Robbins No. 23 incubator with the doors open in such a way that the trays arranged in the incubator can be seen. The ones at the left are the hatching trays and the remaining trays are what is known as the turning rack. The second picture, which we will refer to as "B", is the picture of the same incubator with the turning racks tilted so that the top of the drum is brought forward. The third picture, "C", is of the same incubator with the bottom of the turning racks brought forward, thus representing the two different positions in which the turning racks stand at all times. The fourth picture, "D", is a photograph of the same machine, taken from an angle in which the turning racks are so tilted that the bottom of the rack is brought forward and in which the incubating trays can be seen just beyond the turning rack.

The photographs just mentioned are of the Robbins No. 23 incubator that we made tests on in Cleveland and which we made both with and without eggs in the said

incubator, which had restricted inlets for fresh air and outlets for foul air, and water pans and heaters. There were two fans located at the back of the incubator, each of which was 60 inches across. The two of them practically cover the rear wall of the incubator, with only a small space between the fans, a very small space between the tips of the blades and the side wall, a little larger space at the ceiling, and approximately 10 inches at the floor of the incubator. Those fans rotated from 200 to 220 r.p.m. and have the blades thereof set at approximately a 45° angle and are set within an inch and a half of the rear wall. When they are rotated it is not possible for them to thrust the air forward as you would ordinarily expect from that type of fan because they cannot be fed from the rear, but they act as centrifugal fans, having the same effect approximately as they would have if the blades were placed in the same plane as the axis about which they rotate. In other words, the air is thrown off from the tip of the blade centrifugally until it strikes the top and side walls of the incubator, which direct it forward. Due to the rotation of the fans, this air does not come straight out to the front of the machine, but is inclined at an angle. In the corners this is inclined to be more straight, where the corners deflect it, but on the top and side walls the current is moving at a rather decided angle across the walls, toward the front of the machine. At the front it is deflected or turned again, or mushroomed, where it is drawn back toward the fan itself.

Whereupon counsel for plaintiffs offered as Plaintiffs' Exhibit No. 9, A, B, C and D, the photographs above

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referred to, which were admitted and received in evidence.

Counsel for plaintiffs also offered as Plaintiffs' Exhibit No. 10 the diagram headed "Figure 1" above discussed, and which was admitted and received in evidence over the objection of counsel for the defendant that same was immaterial and that no definite and positive testimony had been adduced in explanation of the same as to the arrows occurring thereon, and that same was confusing rather than illuminating, and as to which the Master observed:

"THE MASTER: I presume it is understood that the diagram is illustrative of the witness' testimony, and that the witness is testifying as to his opinion as to this."

The witness resumed:

The diagrams illustrate the currents which I found with the machine closed.

The tests in determining the flow of the current were made in different ways, but for the most part I relied on anemometers. You can make the tests to illustrate this by what we call a ribbon test, that is, fine ribbons of tissue paper were secured to the top and side walls of the machine and you can then watch the directions that they take when the fans are in operation. This was then checked with an anemometer or several anemometers, to determine their directions and their velocities. This diagram which has just been introduced and which is marked "Figure 1" on the face thereof, does not have arrows showing the return current. They were purposely omitted to avoid confusion and this illustrates the outgoing cur-

rent that is produced by the fan in operation. This particular diagram for the purpose of representation and for illustration of the outgoing current, was worked out first with the egg trays in, and then later checked with the egg trays out, and it has been checked back and forth both ways.

The presence of the egg trays has very little effect on the outgoing current, although it does tend to make certain deflections at places, but the general outgoing movement is as illustrated here, deflected slightly by the racks at different points of support.

The next diagram is designated as a diagrammatic vertical cross-section of the Robbins incubator in the plane of fan axis, and the arrows indicate the paths followed by the air currents. The path is outward along the ceiling, toward the front of the incubator, and outward along the floor. The path of the main volume or body of the air in the incubator is moving inward toward the fan and in between the outgoing current on the ceiling and the floor. This diagram, as with the other, was made both with and without trays in position and illustrates the air currents in both conditions.

Whereupon counsel for plaintiffs offered as Plaintiffs' Exhibit No. 11 the diagram above referred to, which was admitted and received in evidence.

The witness resumed:

The next diagram which I have is designated as a diagrammatic horizontal cross-section of the Robbins incubator in the plane of the fan axis and shows the outgoing current from the fan along the two walls with the main body of the current going inward toward the

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fan. This diagram shows the currents of air moving through the incubator both with and without the egg trays in position.

The portion of the incubator to the left of the dotted line X-Y represents the hatching area.

The fans in the No. 23 Robbins incubator rotate at a speed of approximately 210 r.p.m., and develop or deliver better than 6,000 cubic feet of air per minute.

The velocity of the air developed is from as high as 1400 feet per minute down to 150 feet per minute, depending upon the point at which it is taken.

Whereupon counsel for plaintiffs offered as Plaintiffs' Exhibit No. 12 the last drawing above referred to, which was accepted and received in evidence.

The witness resumed:

Referring to Plaintiffs' Exhibit No. 12, the ingoing current has a speed varying from 400 feet per minute to 600 feet per minute, in the main body of the fan, and as it reaches a point approximately four to six inches from the tip of the fan blade, we have cross currents. The nearer you come to this dividing point the less current you will find, but that area is only a very short distance, a matter of two inches; in other words, from near the tips of the blades to the center of the machine there is a strong ingoing current that will average better than 500 feet per minute. At the tip of the fan the air current is coming outward, directed that way by the side walls and the ceiling of the machine. Here we have currents, which I have indicated as 900 feet per minute. We have found some as high as 1400 feet per minute, and others as low as 150 feet per minute, depending

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upon the exact spot that we took the reading from along the side walls.

The vertical plane that these two illustrated air currents are on is designated in the attached description. As to the horizontal plane that Exhibit 12 is taken on, it represents a diagrammatic horizontal cross-section of the Robbins in the plane of fan axis. Exhibit 11 is in a vertical plane of the fan axis. The current which flows through the tilting racks is an induced current that is being drawn into the fan, and it diffuses the fresh air that is admitted and also the moisture, and keeps the air at a uniform temperature at all points throughout the machine, by conducting the heat from the hatching eggs to the remainder of the incubator. It carries the heat from the eggs in all the later stages whether it be from the twelfth day on or the last few days of incubation. It carries the heat from the older eggs to the younger or to the eggs that have just been set, equalizing the temperature at all points. The current which is moving through the tilting trays is approximately horizontal and with respect to that current the egg trays are set at a 45° angle and contain eggs from fresh to eighteen days old. As to such transfer of heat units from older to fresher eggs, the currents of air that pass out from the fan over the hatching trays are circulated across the front of the machine and over into the drum or the turning rack of the incubator. There is also the movement of the air through the drum, taking heat from one portion of the drum to the other portions, and also the general movement of carrying the heat by the air currents going back into the fan and being re-circulated on an-

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other cycle through a different part of the machine. These are definite currents; are definable and flow constantly in definite channels in the different parts of the machine. They flow outward in definite cycles from the fan to the front of the machine or in that direction and back to the fan again. They can be defined at most points throughout the incubator, making them very distinct and identifiable currents.

As to there being anything in the Robbins incubator that directs or assists in the direction of these currents, the drum or turning rack is placed two and a half inches from the end wall, which would be the right-hand wall as one faces the incubators, making a passageway there for the outgoing air to come to the front of the machine. There is also a like space between the left-hand side of the hatching racks and the wall there.

At the top of the incubator there is a five inch space over the hatching racks, over the turning racks a space of two and a half inches, below the hatching racks a ten inch space, and below the turning racks there is approximately a two and a half to three inch space.

The supports for the hatching eggs are secured to the side wall in such a way that they do not obstruct the outflowing currents from the fan along the left-hand side wall where the hatching eggs are positioned. That is done by small blocks, the width of the supporting strips, fastened to the end wall with screws and then the strips fastened on to that, which is in direct contrast to the way these strips are supported at the front as shown in photograph D, which latter shows a strip from top to bottom to which the slides are attached. The central part of

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these slides and the opposite—the back ends of those slides—are secured on blocks without the continuous support from top to bottom, and this permits a passageway along that side wall. There is a space between the hatching trays as shown in the photographs A, B and C, and also shown in side view in photograph D.

The outgoing current moves through these spaces around the drum and at the sides of the hatching trays. The air that goes into the hatching trays, goes through the hatching trays, gets over into the part of the incubator occupied by the tilting trays by passing between the slats or the openings as shown in photograph D. The spaces I have referred to are those between the top of one hatching tray and the bottom of the tray immediately above it, which I will mark with the letter "E" on photograph D.

The air in the Robbins machine moves in direct currents without any oscillating or mixing or churning motion. In the Robbins incubators the eggs are arranged at different levels in a closed chamber which has restricted openings for the escape of foul air and the admission of fresh air, with conservation of moisture within the incubator and a current of heated air applied to the eggs, with the temperature throughout the incubator substantially the same. The air is vitalized, which means life-giving, and contains the proper oxygen or proper fresh air and moisture with the carbon dioxide removed. In the Robbins incubator I find eggs in the various stages of incubation which are set in these direct currents of air. The current of air as it flows over the eggs in the various stages of incubation diffuses the heat and

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vitalizes the air and carries the heat in the advanced stages to the lesser or to the other parts of the machine where the eggs are in a less advanced stage.

As to the fans in the Robbins incubator rotating and operating in a distinct compartment or room, there is a space at the rear of the turning rack that is comparable to a space 12 inches wide and the height of the incubator. These are passages which conduct the air from the fans to the opposite wall of the incubator from which the fan is located, and those are the passages I have been talking about. The restricted openings in the Robbins incubator are located in the rear wall thereof directly behind the fan, and there are also openings located in the ceiling. If the fans are both rotating in the same direction, the openings behind the fans are intake openings, and the openings in the ceiling are exhaust openings.

"Q What is the character of the movement of the air through those openings?

A It is moving constantly in one direction. It has a slight jumping motion, due to the passage of the fan blades, but it is constantly moving in."

I am referring to the openings behind the fan.

As to the openings in the top where the foul air is emitted, there is a very uniform outward movement there, although under some conditions it is possible to obtain a slight fluctuation of that. It is always out, although not exactly at the same speed, and I have determined this by observing the movement of light particles from the exhaust openings and checking the rapidity with the

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anemometers which we laid over the openings and by means of which I observed the direction of the air.

I have the Robbins No. 23 incubator which has been shipped here to Los Angeles, and is now at a warehouse in this city, and I am prepared to make demonstrations with it to illustrate my testimony with respect to air currents and other features.

As to the presence or absence of eggs having any effect upon the general current movement, I would say that the general movement and the character of the movement are the same. There are slight deflections that are caused by the arrangement of the eggs, but the speed of the air through the hatching trays is practically the same. The speed of the air through the incubating trays is somewhat retarded. The eggs in the Smith incubator affect the current in the same way that they do in the Robbins.

Whereupon an adjournment was taken to the Los Angeles Warehouse for a demonstration with the said Robbins No. 23 incubator, and whereupon the following proceedings were had, to wit:

Counsel for plaintiffs offered as Plaintiffs' Exhibit No. 13 the Robbins incubator No. 23, which was admitted and received in evidence; and also offered as Plaintiffs' Exhibit No. 14 the Smith incubator in said warehouse which likewise was admitted and received in evidence.

Whereupon an adjournment was taken until 2 P. M. of the same day.

(Testimony of Joseph I. Taggart)

JOSEPH I. TAGGART,

Recalled

The witness resumed:

After adjournment of court this morning, we went to the Los Angeles Warehouse, and before the Master there tested a Robbins No. 23 incubator, by first showing the action of the air currents upon ribbons of tissue paper attached to the ceiling, side walls and floor of the incubator, which indicated that the directions of the air currents as outlined in my testimony this morning were correct. The same tests were also made with the trays in the incubator, which did not affect the movement of the air currents across the ceiling, side walls and floor. The incubator was checked without trays and with trays with the anemometers, showing the velocities in different sections of the machine and the speed of the fan was also checked with one rotating at 212 r.p.m. and the other at 208 r.p.m. We then checked the holes at the rear of the incubator showing a uniform movement of air in at that point and checked the holes on top of the incubator to show there was a uniform exhaust at all times from the exhaust ports. We also pointed out to the Master that there was a passageway between the hatching trays and the left-hand wall that was not obstructed, approximately two and a half inches wide, and also a passageway between the right-hand end of the turning rack and the right-hand wall as one faces the incubator in each case.

We also demonstrated passage of air currents from the incubating trays into the part occupied by the tilting

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trays. There was a strong movement from the front end of the hatching trays across into the section occupied by the tilting trays. Anemometers at three or four different places indicated a movement of at least 300 feet per minute. We also found there was a movement of air from the front of the machine through the tilting trays towards the fan and this was substantially in a horizontal plane whether or not the trays were tilted, and tests were made with the trays in each position. The fan from tip to tip was 60 inches or five feet in diameter with each blade 28 inches long. The four blades were mounted on a spider so that the blades do not extend entirely to the center of the fan.

As one faced the machine, the fans were rotating counter-clockwise, which is the same as shown in Exhibit 10. No changes have been made on that machine since I acquired it from the Robbins Incubator Company, and it is in exactly the condition as we received it.

CROSS-EXAMINATION

BY MR. O'BRIEN

I testified that prior to the year 1915 eggs were never hatched in commercial incubation except in a single layer. I did not mean that patents had not issued for incubators with several layers of eggs, and I am aware that many patents have issued which show eggs arranged tier upon tier. I have stated that in respect to the air circulation in the Robbins machine, "the air moves forward at the outside and rearward the center" and I understand that in said machine the eggs during the 18 day

(Testimony of Joseph I. Taggart)

period of incubation are arranged in all stages of incubation.

"Q Then, the air currents, whether they move forward or whether they move backward, are brought simultaneously in contact with the eggs in all stages of incubation, are they not?

A One particular current?

Q Currents generally. I don't know what you mean by one particular current but the general circulation of air is exteriorly toward the front and interiorly toward the back? That air, whether it goes forward, whether the currents go forward or whether the currents go back, come simultaneously in contact in the Robbins machine with eggs in all stages of incubation, do they not?

A The one particular current at one particular point is only touching one stage of eggs at a time but the volume of air is moving through all the eggs at once.

Q And those eggs are in all stages of incubation in the Robbins machine, are they not?

A Yes, sir."

I understand that in the Robbins machine, after the eggs are once placed in the machine and the trays placed upon the racks, that they are never moved until they are ready to hatch, when they are taken out and put in the hatching section at the left of the machine.

I testified in this cause that in the Robbins machine the fans drive the air out centrifugally and do not operate as fans usually do and push the air forward due to the fact that there is no inlet from the back.

I later testified that there were openings in the back which appear in my photographs and pictures, but the

(Testimony of Joseph I. Taggart)

opening is so small, however, that it is an infinitesimal part of the volume of air that the fans deliver. There are several openings, in fact four or five, of one fan and the diameter of each is about an inch and three-quarters. The fans in the Smith incubators at the Hewitt hatchery and the Best O' Care hatchery were 16 inch diameter Robbins & Myers fans; 110 volt, 60 cycle.

If running in free air those fans will deliver 1,455 cubic feet of air per minute, but if not running in free air and with obstructions, that will naturally be reduced. I did not notice whether the Buckeye machines used the Robbins & Myers fans, but I know that such fans are used by Buckeye. They are a different style fan but all of them are 60 cycle and run at approximately 1500 r.p.m.

I do not know the speed in terms of feet per minute of the exterior tips of the fans in the Smith machine, although I can figure it, which I will do. My figures show it is 75,000 inches or 6500 feet per minute. The speed of the outer tips of the Robbins fan is approximately 3400 feet per minute upon a consideration of the Robbins machine fan being 5 feet in diameter and 15 and 5/7ths feet in circumference with a revolution of 220, which is the ideal fan, although the commercial machines down there ran at 208 and 212. Figuring it at 15.7 feet circumference and 212 r.p.m., the result is 3,328 feet as against 6500 feet in the Smith and Buckeye. The ones we tested yesterday were turning up from 1280 to about 1380 r.p.m. and the speed of the ideal fan is about 1500.

I have tested commercial Smith and Buckeye incubator fans with a speed of 1700 r.p.m. and with a tip speed of

(Testimony of Joseph I. Taggart)

approximately 7250. I testified that the Robbins fans do not throw air forwardly except close to the wall. Their action is centrifugal except at the very tip. I mean by the word "tip" that if you take the tip of the blade as it is passing the corners of the incubator, the action is still centrifugal, but where you run it along the side wall where the tip of the fan comes close to the wall of the machine, then you can get an outward movement of as much as 4 to 5 inches back from the tip.

That affected the volume of the air in the machine, as indicated by the anemometer tests I made, for at least 6 or 7 inches from the side wall.

It is true that on the left-hand side of the Robbins machine in the vicinity of the hatching trays there is a forward movement across the left-hand side of the tray.

I was not able to find any forward movement through the egg trays on the opposite side.

As to whether or not I made a test to determine that while we were down there before luncheon, I will say that I didn't make a test in lots of places.

As to your question "If the air moves forward six inches from the wall on the hatching side here, wouldn't it move forward on the opposite side even though there might be a little more obstruction on the wall of the hatching side?", you have a space approximately 3-1/2 inches between the trays that is unobstructed in any manner on the hatching side, and it permits a free circulation there. On the turning rack side you have placed lots of obstruction. I mean as one faces the machine

there is obstruction in the path of the current and the result is that it goes around the outside.

As to whether or not the current on the right-hand, as one stands facing the machine, passes through the egg trays, I would say that it goes over the top and along the side wall. It might enter the egg trays nearest the fan a little bit but it doesn't come through the drum. It enters the drum for a distance of perhaps 6 inches in places and I have made measurements to determine how far it does come through the egg trays. When they are tilted forward on the right-hand side there is an upward movement through the egg trays from the bottom towards the top of the trays that are nearest the fan for a space of approximately 6 or 8 inches. It goes vertically upward through all the trays that are within 6 or 8 inches of the fan. When the trays are tilted or inclined the fan runs in a certain manner so that there is an upward movement from the tip of the blades along the right-hand side. The air rushing into the fan has a tendency to turn upward near the tip of the blades and there is an upward movement across the trays at that point. The air does not get through to the front wall of the machine. The air that goes through the trays goes up to the ceiling and may be thrown out towards the front wall, but it does not go directly through to the front wall, which fact I have demonstrated absolutely.

I did not say that in the Robbins machine there is a slow draft resulting from the action of the fans.

By induced current I mean the air that is being drawn to the fan to feed the fan rather than the strong draft that is produced by the air coming from the fan, which

(Testimony of Joseph I. Taggart)

latter is very strong in a limited area. The induced current is more uniform and is feeding into the fan.

To my knowledge there has never been a Smith or Buckeye commercial machine that did not have curtains or partitions in the corridor.

RE-DIRECT EXAMINATION

BY MR. ELY

The eggs in the Robbins machine are moved into the hatching trays on the eighteenth day. Hatching generally starts about the end of the twentieth day and continues over the twenty-first day.

I haven't figured out the total volume of the air entering through the openings in the rear walls of the Robbins incubator as compared with the entire volume of air circulating through the incubator, but it is infinitesimally small. I would say that if you had a 2-inch opening with air moving through there at the rate of 300 feet per minute, you would have approximately 2 cubic feet of air per minute per opening entering the machine while each fan in the Robbins machine is moving approximately 6,000 cubic feet per minute. The air moving through the Robbins openings varies a great deal with the operation of the machine, but it was moving about the rate of 300 feet per minute when I tested it there this morning. There are five intake openings back of one fan and two back of another fan. Very much less than one percent of air enters through those openings.

I got the figure of 220 revolutions per minute which I used with regard to the Robbins fans, in one of my calculations from the middle of page 10 of the Robbins

(Testimony of Joseph I. Taggart)

catalog, and it is the approximate figure which that size motor, pulley and fan develop. In giving calculations on the Smith machine, I used 1700 r.p.m. with respect to the Robbins & Myers fan. In actual practice the speed developed by that fan varies with the cycle and with the power that you have in different sections, and we have checked them all the way from 1285 up to approximately 2000 r.p.m., which is an exceptional case, on direct current, and which can be obtained by an overloading of the line. I have never checked one over 1720 r.p.m. on alternating current, and which is unusual.

The volume of air delivered by the fans in the Smith incubator is less than 1500 feet, although the actual rated volume, as stated by the Robbins & Myers Company, is 1455 cubic feet per minute. The two fans in the Robbins machine move over 12,000 cubic feet per minute, while the four fans in the Smith move approximately 6,000 feet per minute. As to the relative velocity of the currents in the two machines, there is not a great deal of difference when the air immediately leaves the fans, but a little stronger in Robbins than I have been able to find in the Smith machine. The velocity among the incubating eggs compares very favorably. I mean by that the velocity among the incubating eggs is about the same.

RE-CROSS EXAMINATION

BY MR. O'BRIEN

I made a mistake when I figured the volume of air passing through an opening two inches in diameter in the Robbins machine to be at the rate of 300 feet per minute.

(Testimony of Harry B. Perkins)

It is actually three times what I gave before and is approximately six and a fraction cubic feet per minute.

RE-DIRECT EXAMINATION

BY MR. ELY

With those revised figures the percentage of air entering those holes with regard to the entire volume of air is about one-tenth of one percent.

HARRY B. PERKINS,

a witness called on behalf of plaintiffs, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. LYON

I reside in Cleveland, Ohio, am 63 years old, and secretary of the Smith Incubator Company. I have been connected with that company for five years, and am responsible for administering its finances, which includes keeping posted through the sales organization of the company on the sales of the Smith and Buckeye incubators and their comparative sales with competing incubators.

The books and records of the Smith Incubator Company show the number of incubators that have been sold under the patent in suit and indicate the royalties that have been paid by the Buckeye Incubator Company under the said patent. Those books are within my custody and under my supervision and are very voluminous records and impractical of production in court.

I have had a statement made, which I can produce, which I know to be correct, in the nature of summaries from those books to show the number of incubators that

(Testimony of Harry B. Perkins)

have been sold by the Smith Company under the patent in suit, together with their prices and the same figures also as to the Buckeye Company. I herewith produce that statement, the columns of which indicate first, the year, then the number of units, the value of the units and the egg capacity of the Buckeye incubators sold. The same thing follows for the Smith incubators. The third series of columns show the combined number of units, value and egg capacity for the production and sales of the Buckeye and Smith Incubator Companies under the patent in suit. The value indicated is the sales price to the user or customer.

$19,773,000 worth of these incubators have been sold since 1917 to the end of 1929 by the two companies, with a total egg capacity of 152,670,000.

My sales organization keeps a survey of what business competitors are doing as compared with our business, and I am kept advised of the results of those surveys and my company acts on them in conducting its sales program. The Buckeye and Smith companies' sales of incubators represent approximately 75 percent of all incubators used in this country, based upon capacity.

Whereupon counsel for plaintiffs offered as Plaintiffs' Exhibit No. 15 the statement above referre to, and which was admitted and received in evidence over the objection of counsel for defendant that the statement was not the best evidence and that the books and records or photostatic copies of same should and could have been produced.

"MR. O'BRIEN: No cross examination."

The said statement, Plaintiffs' Exhibit No. 15, was then copied in evidence as follows:

PLAINTIFFS' EXHI

RECORD COVERING GROSS SALES OF F

BUCKEYE				SMITH		
EAR	NUMBER UNITS	VALUE	EGG CAPACITY	YEAR	NUMBER UNITS	VAL
917	39	1,740.00	Not known			
918	103	38,962.95	" "			
919	166	93,771.33	" "			
920	215	217,718.85	" "			
921	236	270,299.41	1,435,152			
922	557	684,497.13	4,470,384	1922	60	437,
923	707	725,847.66	5,737,248	1923	84	584,
924	845	773,017.75	6,059,052	1924	79	528,
925	1,158	1,247,399.49	10,879,392	1925	143	928,
926	1,569	1,890,042.13	15,839,700	1926	321	2,106,
927	1,450	1,795,432.26	16,255,208	1927	327	2,162,
928	613	669,984.44	6,069,388	1928	170	1,125,
929	1,040	1,312,227.27	12,724,368	1929	345	2,179,
	8,698	$9,720,940.67	79,469,892		1,529	$10,052,

PLAINTIFFS' EXHIBIT NO. 15

RECORD COVERING GROSS SALES OF FORCED DRAFT INCUBATORS

	BUCKEYE			SMITH				COMBINED SMITH AND BUCKEYE		
YEAR	NUMBER UNITS	VALUE	EGG CAPACITY	YEAR	NUMBER UNITS	VALUE	EGG CAPACITY	NUMBER UNITS	VALUE	EGG CAPACITY
1917	39	1,740.00	Not known					39	1,740.00	
1918	103	38,962.95	" "					103	38,962.95	
1919	166	93,771.33	" "					166	93,771.33	
1920	215	217,718.85	" "					215	217,718.85	
1921	236	270,299.41	1,435,152					236	270,299.41	1,435,152
1922	557	684,497.13	4,470,384	1922	60	437,500.00	2,820,000	617	1,121,997.13	7,290,384
1923	707	725,847.66	5,737,248	1923	84	584,000.00	3,948,000	791	1,309,847.66	9,685,248
1924	845	773,017.75	6,059,052	1924	79	528,720.00	3,713,000	924	1,301,737.75	9,772,052
1925	1,158	1,247,399.49	10,879,392	1925	143	928,930.00	6,721,000	1,301	2,176,329.49	17,600,392
1926	1,569	1,890,042.13	15,839,700	1926	321	2,106,051.00	15,087,000	1,890	3,996,093.12	30,926,700
1927	1,450	1,795,432.26	16,255,208	1927	327	2,162,479.50	15,369,000	1,777	3,957,911.76	31,624,208
1928	613	669,984.44	6,069,388	1928	170	1,125,321.00	8,615,000	783	1,795,305.44	14,684,388
1929	1,040	1,312,227.27	12,724,368	1929	345	2,179,453.50	16,928,000	1,385	3,491,680.77	29,652,368
	8,698	$9,720,940.67	79,469,892		1,529	$10,052,455.00	73,201,000	10,227	$19,773,395.61	152,670,892

(Testimony of Carl Popp)

CARL POPP,

called as a witness on behalf of plaintiffs, being first duly, sworn, testified as follows:

DIRECT EXAMINATION

BY MR. ELY

I am 26 years old and live in Denver, Colorado, where I am engaged in the operation of a chick hatchery known as the Dry Climate Hatchery, and am associated in said business with my father and one John Brown. I am secretary and treasurer of the company and we operate two Smith incubators, the first one being purchased in 1927 and erected in September of that year, while the second machine was bought in June, 1929, and erected in September. The machines have a respective capacity of 47 thousand and 52 thousand eggs.

The first hatching in the first machine was set October 20, 1927, and came off November 10th.

I know Mr. John L. Robbins, who is in the court room, and first met him in October of 1927 in our hatchery building, to which he had come as a customer, and at which time and place we had a short talk and visit and he looked over the building and the new incubator.

We went through the machine and I explained some of the parts of it to him. Two weeks after that, which I fix by the fact that it was within the period of the first hatch, Mr. Robbins made a second visit to my hatchery and brought a hydrometer with him to test in the

(Testimony of George C. McConnaughey)

machine. He left the hydrometer in the said machine for approximately ten minutes. He was on the inside and I was on the outside of the machine and I cannot say how much he inspected it.

"MR. O'BRIEN: No cross-examination."

GEORGE C. McCONNAUGHEY,

called as a witness on behalf of plaintiffs, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. ELY

I am 33 years old and live in Cleveland, Ohio, and am by occupation an attorney, employed by the Smith Incubator Company and Dr. Smith. I recognize some papers handed me, one of which is a letter dated November 5, 1929, addressed to Herbert H. Waxham, Waxham Hatchery, 14622 Parthenia Street, Van Nuys, Los Angeles, California. I wrote to Mr. Waxham as follows: "Dear Sir: We have been advised that you operate one or more incubators at your hatchery which are an infringement of the Smith patent No. 1,262,860, dated April 16, 1917. This patent is owned by Dr. Samuel B. Smith of Cleveland, Ohio, and I have been directed to notify you of your infringement and call upon you to cease infringing operations at once. Will you kindly acknowledge this letter as soon as possible and advise us that you are discontinuing the infringement complained of?" I have a registered receipt here which covers the delivery of said letter and on the face of which appears the signatures of Herbert H. Waxham and Mrs.

(Testimony of John L. Robbins)

H. Waxham, under date of November 8, 1929. Said letter is a correct copy of the letter which I sent Waxham on that date.

Another letter is a registered air mail letter of November 16, 1929, signed by Herbert H. Waxham and addressed to myself, and which said letter I received in the usual course of the mails. The next letter is dated November 20, 1929, from A. J. O'Brien, at Denver, Colorado, and addressed to myself and signed by Mr. A. J. O'Brien, and which said letter I received in the same manner.

Whereupon counsel for plaintiffs offered the above referred to correspondence as Plaintiffs' Exhibit No. 16, and which was admitted and received in evidence.

JOHN L. ROBBINS,

called and sworn as a witness for plaintiffs, testified as follows:

(Mr. L. S. Lyon claimed the right for plaintiffs to cross-examine Mr. Robbins under Section 2055 of the California Code of Civil Procedure, and to which practice counsel for defendant objected. The Master permitted the examination to proceed, subject to later argument as to whether or not such witness was called for cross-examination or as plaintiffs' own witness.)

(Testimony of John L. Robbins)

CROSS-EXAMINATION

BY MR. L. S. LYON

I reside in Denver, Colorado, and am the manufacturer of the Robbins incubator alleged to be an infringement in this particular case. I manufacture these incubators under the name of Robbins Incubator Manufacturing Company.

I am the defendant in Case No. 8805 pending in the United States District Court in Colorado entitled "Ira M. Petersime & Son, a firm composed of Ira M. Petersime and Ray Petersime, plaintiffs, vs. John L. Robbins, trading as Robbins Incubator Manufacturing Company," in which I am sued for infringing United States Letters Patents Nos. 1,562,787 and 1,646,490, because of my manufacture and sale of this said Robbins incubator. I filed a petition for rehearing in that case, which is verified by me and accompanied by certain affidavits of two engineers and their reports, which I rely upon to show the mode of operation of the Robbins incubator, and of which I am handed a photostatic copy.

"THE MASTER: Is that a photostatic copy of your verification?

A. Yes."

Whereupon counsel for plaintiffs offered as Plaintiffs' Exhibit No. 17 the said petition referred to, which was admitted and received in evidence.

"MR. O'BRIEN: No cross-examination."

Whereupon Mr. Ely stated that plaintiffs' prima facie case was closed.

Whereupon ensued a short recess.

(Testimony of John L. Robbins)

Defendant's Proofs

Counsel for defendant then moved for dismissal of plaintiffs' case upon the grounds that the evidence of the plaintiffs did not show infringement, and that plaintiffs had failed to make out a case, and which said motion was denied by the Master, with an exception to defendant.

Whereupon counsel for defendant offered as Defendant's Exhibits A-1 to A-36, both inclusive, the following patents, all of which were admitted and received in evidence;

Patent No.	Date	Name	Exhibit No.
3,019	March 30, 1843	Guerin	A-1
120,253	Oct. 24, 1871	Endemann	A-2
152,644	June 30, 1874	Jones, et al.	A-3
240,004	April 12, 1881	Bate	A-4
272,744	Feb. 20, 1883	Morgan	A-5
286,756	Oct. 16, 1883	Winkler	A-6
297,676	April 29, 1884	Conant	A-7
320,463	June 23, 1885	Cutting	A-8
330,457	Nov. 17, 1885	Bassini, et al.	A-9
344,474	June 29, 1886	Campbell	A-10
410,110	Aug. 27, 1889	Knowles, et al.	A-11
432,282	July 15, 1890	Proctor, et al.	A-12
Re. 11,460	Dec. 25, 1894	Proctor	A-13
535,175	March 5, 1895	Schwartz, Jr.	A-14
553,723	Jan. 28, 1896	Proctor	A-15
559,676	May 5, 1896	Christianson	A-16
591,870	Oct. 19, 1897	Morgan	A-17
691,837	Jan. 28, 1902	Bell	A-18
709,650	Sept. 23, 1902	Scott	A-19

(Testimony of John L. Robbins)

Patent No.	Date	Name	Exhibit No.
725,079	April 14, 1903	Hawkins	A-20
745,458	Dec. 1, 1903	Perkins	A-21
798,697	Sept. 5, 1905	Perkins	A-22
828,181	Aug. 7, 1906	Boyd	A-23
886,325	April 28, 1908	Osborne	A-24
891,019	June 16, 1908	Verna	A-25
916,273	March 23, 1909	Coons	A-26
916,454	March 30, 1909	Coons	A-27
949,653	Feb. 15, 1910	Klinke	A-28
1,075,747	Oct. 14, 1913	Zimmer	A-29
1,100,146	June 16, 1914	Olson	A-30
1,137,752	May 4, 1915	Goldstein	A-31
1,160,793	Nov. 16, 1915	Van Keuren	A-32
1,165,958	Dec. 28, 1915	Freas	A-33
1,205,445	Nov. 21, 1916	Fullington	A-34
(German)			
117,089	Nov. 21, 1899		
	Feb. 4, 1901	John Mann	A-35
(German)			
155,917	Nov. 7, 1901		
	Nov. 11, 1904	Stulik	A-36

Whereupon counsel for defendant offered in evidence a translation of the Stulik German patent No. 155,917, and which was admitted and received in evidence and marked by the Master as part of Exhibit A-36.

Counsel for defendant also offered in evidence a certified copy of file wrapper and contents of the Smith patent in suit, No. 1,262,860, as Defendant's Exhibit B, and which was admitted and received in evidence.

(Testimony of Samuel E. Fouts)

Counsel for defendant then offered as Defendant's Exhibit C for identification a model of the Robbins structure, and which was so marked for identification.

Whereupon an adjournment was taken until Thursday, March 27, 1930, at 10 o'clock A. M.

SAMUEL E. FOUTS,

called as a witness on behalf of defendant, being first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. O'BRIEN

I am 63 years of age and reside in Los Angeles, and am a patent lawyer, solicitor and expert in patent matters. I graduated from the School of Electrical Engineering at Purdue University in 1892 with the degree of bachelor of mechanical engineering. My work in that school related largely to mechanics, electricity, mechanical drawings, mathematics and kindred subjects. The year after my graduation I became professor of pattern making, moulding, casting and machine work in the Manual Training School at Toledo, Ohio, where I was in touch with all sorts of mechanical matters. I spent a large part of the summer of 1893 at the World's Fair at Chicago, where I made a rather intensive study of many of the methods of machinery on exhibition there. After that I took the Civil Service examination and was appointed assistant examiner in the Patent Office, starting my work in such capacity in April, 1894. My work there comprised a study of mechanical devices and a comparison of one with another and determination of questions of invention. I remained in the Patent Office in such work for about

five or six years, in the meantime taking a law course in what was then called the Columbia University, and which is now the George Washington University. I graduated from the law school and then passed the bar examination, and was thereafter admitted to practice in the Supreme Court and the Court of Appeals, both of the District of Columbia. I resigned my position in 1899 and took up the practice of patent law in Cleveland, Ohio, before the Federal Courts and the Court of Appeals for the Sixth Circuit. Four years later I associated myself with Mr. John B. Hull, who is now the senior member of the firm of Hull, Brock & West, patent attorneys at Cleveland, and in 1906 Mr. Albert H. Bates associated himself with us. I left Cleveland in 1910 and went south, largely on account of my wife's health, but because of inadequate schools, I returned to Washington as a temporary measure. The administration promoted me shortly to Examiner in Chief of the Patent Office, and I stayed in that capacity until 1916, when I again resigned. The work of the Examiner in Chief is comparable to the work of the Federal Courts, and comprises questions of invention, patent utility, etc., with questions of priority arising in interference proceedings. For about 5 years before I resigned I was also professor of patent law in the National University at Washington, D. C.

When I first came to Los Angeles, California, and during Mr. Miller's absence on a protracted vacation, I practically had charge of the office of Hazard & Miller. Upon his return I went to San Francisco, where I was engaged almost exclusively for 2 years in the Carson

(Testimony of Samuel E. Fouts)

litigations on the Carson patents for metallurgical furnace. When the patent end of that litigation was reached, I came here and located in the same office I now have.

I have read the Smith patent in suit and studied it carefully, and I understand the structure of it and the process disclosed in it. I also have studied the Robbins incubator, defendant's structure complained of in this suit, and I understand its structure and mode of operation.

I am shown a model which I am told has been marked for identification as Defendant's Exhibit C, and inquiry is made as to how the model compares with the Robbins incubator complained of in this suit. This model embodies the structure of the Robbins incubator. The parts are positioned as they are in the Robbins incubator and it is a very good model to illustrate the principle upon which the Robbins incubator operates. While the number of trays in the tilting rack portion is fewer than in the full size Robbins machines that I have examined, they are positioned in the same place with respect to the other parts and are retained by the same kind of means and are tiltable by a similar kind of means. The tilting racks or trays are placed in front of the fans in the same manner and the hatching trays over at the left end as we look at the machine from the front are in the same relative position. It is, in fact, a splendid model for illustrating the principle upon which the Robbins machine operates. There are, as Mr. Ely observed, some parts which are somewhat out of proportion. I note particularly the fan blades, which I think are too wide as compared with their lengths, the Robbins blades being thinner and longer than would be indicated by these fan blades,

(Testimony of Samuel E. Fouts)

but so far as the number is concerned, I think it is a good model.

Whereupon counsel for defendant offered the said model above referred to as Defendant's Exhibit C and the same was admitted and received in evidence over the objection of counsel for the plaintiffs, with an exception to plaintiffs, upon the grounds that the model is inaccurate and no identification of origin.

The witness resumed:

I have studied, and I think I understand the structures and modes of operation described in the prior art patents offered in evidence in this suit.

I am asked to compare the structure and process of the Smith patent in suit as defined by claims 1 and 2 alleged to be infringed, with the prior art structures disclosed in the prior art patents offered in evidence, and to state what I find in the Smith structure and process, if anything, that is not found in the prior art structures.

Whereupon objection was made by counsel for plaintiffs upon the ground that the witness had not been qualified as an expert in the art of egg incubation, and which said objection was overruled by the Master, saving to plaintiffs an exception.

The witness resumed:

The Smith patent in suit, which I will take up first, is for an incubator said to be intended for extensive operations and adapted to contain thousands of eggs. Structurally the Smith incubator is a large enclosure, which is comparable, as it says, to an ordinary size room. Looking at it from the front, or looking at the section of Fig. 1, it will be observed that the interior thereof is divided

(Testimony of Samuel E. Fouts)

by hanging curtains, into three compartments, the central compartment being substantially empty and the egg compartments arranged on either side. The central compartment is referred to in the specification as a corridor at the top of which is an electric fan so positioned and connected as to direct a current of air downwardly to the floor where the said current spreads laterally both to the right and to the left or, as some have said, it mushrooms on the floor with part of the air passing underneath curtain 3 at the left of Fig. 1 and to the bottom of the egg chamber on that side. The air then passes upwardly through that egg chamber to its top, where the greater portion of it, as I understand, passes to the right over or into a compartment about the fan motor while a portion of the air escapes out at the top through opening 28. The main body of the air is thus retained in a closed circuit, which repeatedly circulates down the corridor and up to the egg compartments and back again. Of course, the same operation takes place on the right-hand side of the machine, except that the air turns there to the right and describes a sort of anti-clockwise circuit. The eggs in the egg chambers are placed in trays, one of which is shown in Fig. 2, as closely as possible, standing on their small ends. Three egg trays in horizontal position are shown at the top of the egg chamber, and which said trays are not tiltable. Below those trays are the tilting racks which carry the eggs in their intermediate stages of incubation and are made so tiltable in order to turn the eggs more or less as mother hens do. Below the tilting racks are a set of racks for the trays in which the chicks are to be hatched out, and which said racks are not tilt-

able. The upper stationary racks are first filled with fresh eggs and according to the patent in about three days those trays are taken out of those racks and put in the top of the tilting racks and their places are taken by other trays with fresh eggs. In about three days all of the trays which are in the incubator are lowered down to make room for the three fresh egg trays at the top, and this method is repeated about every three days until finally all of the trays in the tilting rack are filled, and such practice continues for about eighteen days, by which time the eggs in the lower ends of the tilting racks have almost reached the hatching stage. During the hatching operation it is not desirable to turn the eggs and so they are taken out of the tilting trays and put in the hatching trays, which are designated as 14. During the later stages of incubation a quite perceptible heat is generated within the eggs, and which raises the temperature of the eggs to a point where it is dangerous to the lives of the chicks. Smith, therefore, proposes to cool these eggs, or at least to hold the temperature down below the danger point, and that is his reason for the current of air directed underneath the curtains over to the bottom of the egg tray stack. This air, passing upwardly through the eggs in the hatching trays, cools these eggs, or at least holds their temperature down and receives from the eggs their heat units which are carried up by the current through the trays in the tilting racks, and the air containing these added heat units is brought into contact with the eggs there and gives up the surplus heat units to the cooler eggs, thus raising the temperature of

(Testimony of Samuel E. Fouts)

the cooler eggs and tending to keep a uniform atmosphere through the egg trays.

This description has been made in my own language and I will now refer to a few statements which confirm that description.

In the first column on page 1, beginning at line 13, it states that the trays are "arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately."

In the same column of the specification at line 25 and after stating that the eggs had been placed in the tilted or inclined position, it states that they are then in "a different location but still subject to the same column of air."

Beginning with line 37, and after stating that the eggs had been again moved to a different position, it says "In this last named position the air will be forced to pass between the different eggs and will in effect act as a cooling medium for the eggs."

Over in the next column, beginning at line 87, and speaking of the trays, it says that "these trays are provided with open mesh bottoms 14 upon which the small ends of the eggs rest in close and solid formation."

There is considérable description about the way in which the racks are tilted, but that all relates to structure and I will not dwe upon it.

On page 2, in the first column beginning at line 29, it states that the "trays near the bottom are preferably

arranged so that the air is forced to pass between the eggs in each tray, thereby cooling or holding the temperature of those eggs down."

Near the bottom of that column is described a feature which I have not referred to but which should be pointed out, which says that the lower ends of the adjacent tilting trays are connected by "flexible strips of fabric which are attached to and extend upward at each side of each rack so as to compel the air to circulate through the mesh bottom and around and about each egg, as heretofore referred to, and the eggs further advanced in incubation are contained in these lower trays; and, as the danger is that the temperature will rise in these eggs to a point injurious to the incubation, the improved method disclosed herein permits the circulating air to act as the medium to prevent the overheating at this stage of incubation, and this is accomplished by promoting an induced draft within the lower trays."

Thereafter follows the part of the description which has been read into the record by one or two of plaintiffs' witnesses as follows: "It is obvious that the fan can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°."

Then follows a sort of summary by Smith as to what he considers is his method, and which states "It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform, and so arranging the eggs that the

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fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal, and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated, and thereafter placing the eggs in final position for the hatching operation."

I wish to point out the last part of each of the two claims in suit, which states "The units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified." That statement is found at the end of both of the claims upon which reliance is made or upon which the plaintiffs now stand.

Whereupon counsel for plaintiffs objected to the last above statement of the witness and asked that his testimony in such regard be stricken and as to which an understanding was reached between the parties and the Court that the testimony of the witness in such regard goes only to the point that such statement is disclosed in the patent rather than technically what is covered by the patent without the witness intending to interpret anything.

The witness resumed:

That completes what I have to say about the patent in suit at the present time. I find that some of the prior patents set up in answer and introduced in evidence relate to the specific branch of heating and ventilating apparatus and methods which has to do particularly with the hatching

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of eggs. Others of those patents in that same general art have to do with the drying of articles of various kinds, various kinds of apparatus. Some of them are moistening devices for articles in different kinds of apparatus, as well as other kinds of devices. Unless there is some reason to do so, I will not discuss the patents in the exact order in which they were introduced. Therefore, I will take up first those patents which are referred to as relating to the art of hatching eggs artificially.

The first such patent is Defendant's Exhibit A-1, the patent to Guerin, No. 3,019. There is little disclosed in this patent that I need to discuss.

"THE MASTER: What is the method or process disclosed in the Smith patent, that is, witout regard to its novelty? What do you gather from reading the patent or how would you describe the method or process?"

The witness resumed:

In answer to the above question, the Smith patent is a process of incubating a plurality of eggs by placing the eggs in an egg chamber at different levels, which means that some of the eggs are higher up than others and distributed in the egg chamber in the order of their stage of advancement in incubation and in which the eggs in the more advanced stage are gradually moved until at the end of the incubating period they occupy an end position in the egg column. The eggs in this column are then subjected to an air current which is caused to traverse the eggs in the egg chamber in a manner which carries the air in a vertical direction, or at least in a direction which is at right angles to the supports for the eggs, so that in passing through the stack of eggs the

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air is caused to pass through the holders or trays which hold the eggs. "The direction which the air is caused to take is such that it is caused, first, to contact with the eggs in the farthest stage of development, and for the purpose of carrying the excess heat units which have been generated in this final or later stage of development away from those hotter eggs in contact with the eggs in the lesser developed stages of development so as to give up the surplus heat units to these eggs in the later stages. That is my understanding of it and I hope I have answered your question. That is, the air currents must first strike the hot eggs in such a way as to absorb the surplus heat there and then carry that surplus heat onto the cooler eggs. You will note that I have not attempted to distinguish between a case in which the hotter eggs are at the bottom of the stack as Smith discloses or a case in which they are at the other end of the stack; but, if the egg stack is reversed so as to put the hot eggs on top, the air current must likewise be reversed so as to get the result that I have stated."

The Guerin patent, on sheet 1, shows a vertical section taken transversely through the hatching chamber; and on sheet 4 a longitudinal section through the same. The egg trays are arranged one above the other to produce a stack of trays and heat is furnished by a boiler through a series of pipes with three pipes extending across the chamber above each of the egg trays. Aside from that structure to which I have referred, I do not see that this patent has any special interest.

"THE MASTER: It shows the eggs arranged in tiers, doesn't it?

(Testimony of Samuel E. Fouts)

A Yes, sir. * *"

The next patent which has to do with egg hatching is the patent to Morgan, No. 272,744, Exhibit A-5. It shows two egg trays at the top of the incubating chamber with the eggs resting upon endless belts whereby the eggs may be turned; one of these belts appears in Fig. 5. Heat is furnished by a boiler arrangement shown in Figure 3, which is heated by a lamp with a sort of elbow pipe extending from the boiler out into the incubating chamber. Fresh air can be admitted at the bottom of the incubator, as shown in Figure 1, through the small openings r, and it then passes up through the heating chamber D around that elbow pipe where the air is heated, and then it goes up into the egg chamber and passes out through restricted openings in the top, which can be regulated by slide P. There are moistening devices, apparently sponges, which are shown as S, in the incubating chamber for the purpose of keeping the atmosphere in the proper condition with respect to humidity. To sum up, this patent shows a plurality of superimposed egg trays in an incubating chamber with means to furnish heat to keep up a circulation vertically up around the eggs and also to furnish proper moisture. The hatched chickens may be placed at the bottom in a drawer E.

The next patent is Exhibit A-6 to Winkler, No. 286,756, and is referred to in the file wrapper and contents of the Smith patent in suit and shows that the examiner placed considerable reliance upon it. It is a rather curious sort of an incubator and instead of having trays as the other patentees have shown, he has an endless traveling chain or conveyor. In fact there are two such

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endless chains and they are connected transversely of the chamber by slats spaced just wide enough to hold an egg. He proposed to hatch in this incubator eggs of various kinds, such as hen, goose, duck and turkey eggs. These, of course, require different lengths of time for incubation. The traveling conveyor is so arranged with means for controlling its movements that when the eggs have been in the incubator the necessary time to bring them to the hatching stage they are discharged onto a small belt which conveys them into the hatching chamber. In the upper right hand corner of Figure 2 there is a door d2 where the hen eggs are put in. Figure 4 shows the belt stepped along by a weight which turns a shaft over which the belt travels and that shaft is controlled by a pawl q′ which is itself controlled by a clock so that every so often that pawl will be tripped and the belt will be stepped along one notch. In that way, the clock being so set, the hen eggs which have been entered at d2 are at the end of 18 days at the bottom of that sort of a serpentine conveyor ready to be delivered on that small belt and carried into the hatching chamber. Heat is provided the incubator by water contained in a series of compartments G, which are placed over the several runs of the conveyor so that the eggs travel underneath these chambers. Fresh air is admitted through small apertures k below the several runs of the conveyor and I take it also it is admitted over the pans K which contain water. The foul air is allowed to escape through the small apertures k and that would take place at or near the top part of the incubator chamber. We have, then, in Winkler, an incubator in which

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the eggs are disposed in an incubating chamber in accordance with their various stages of incubation. Those most advanced are in the lower course of the conveyor and there the surplus heat which they contain would be given off and would rise up through the chamber and would be taken up by the cooler eggs. I wish to refer to just a few short statements in the specification to show that back at this early stage, in 1883, many of the problems which confront incubator men had been not only appreciated but an attempt had been made to solve them. Beginning in line 20 of page 1, Winkler states, "During the progress of incubation the temperature must vary. At the beginning the eggs require a greater heat than at the close, because toward the end the embryo, having increased, furnishes a certain amount of heat for itself." Dropping down to line 36 Winkler says "My machine is so constructed as to allow the introduction of a fresh lot of eggs at short intervals and gives to each lot its own required temperature. This enables me to use successively perfectly fresh eggs without trouble, and makes the process continuous, which is a very desirable result in poultry raising."

In the next column, beginning with line 56, Winkler says "My machine hatches them in small batches removed from the unhatched eggs, so that the temperature is not lowered by removing them, nor are they injured nor do they injure the other eggs." The requisite moisture is maintained by the water in the pans K.

I will refer now to Exhibit A-9, being a patent to Bassini et al., No. 330,457. This patent shows two egg trays, one above the other, with the bottoms of the trays

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formed of open mesh work as indicated in Fig. 8. Heat is supplied from a lamp which heats a boiler B at the left of Fig. 1. Hot water rises from this boiler and passes first through a coil of pipe shown in Fig 3 located at the top part of the egg chamber. The said coil in Fig. 3 is connected with another coil shown in Fig. 4, the latter being down below the two egg trays so that heat is applied above and below the eggs. The heating medium is water, which after passing through the lower coil of Fig. 4 returns to the boiler so as to promote a constant circulation. The bottom parts of the egg trays can be moved in a horizontal plane beneath the trays by pulling on those little wires or rods b2 so as to cause the eggs to roll sufficiently to turn them. Air is admitted towards the bottom of the incubator as shown at the right hand side of Fig. 5. It then passes up first contacting with the coils of Fig. 4 and then passing on up through the egg trays, heating the eggs, and then out through a controlled damper at the upper left hand side of Fig. 4. A thermostat shown in Fig. 2 has been provided by the patentees, and which is adapted to close an electric circuit through some electro magnets shown at the top of Fig. 5, which operation takes place when the temperature rises excessively. When those magnets are energized a lever or armature 1 is attracted which opens a damper in the top of the incubating chamber, thus allowing the hot air to escape. I will read this statement from page 2, beginning at line 47: "It is well known that the temperature within an incubating box must be steadily maintained at certain points, and that it should range between 104°

Fahrenheit at the beginning of the incubation to 98° Fahrenheit at the end."

The next is Exhibit A-10, being the patent to Campbell No. 344,474, and represents a more or less conventional type of incubator, and resembles closely the Bassini incubator just discussed. There are two layers of eggs, both to the right and left in the egg chamber, or in other words, there are four egg trays arranged in pairs, so that the heated air passes upwardly from one tray through the next above it. The incubator is heated and the temperature controlled by means very similar to that just described, but Campbell utilizes the expansive characteristic of hot water to control the damper at the top of the egg chamber. If the water gets too hot, it expands and part of it runs into a little chamber d on the end of a pivoted lever, overbalancing the lever and causing it to rock. As it does so through a series of connecting links, it opens a damper in the top of the incubating chamber and at the same time controls the heating lamp. Fresh air is brought in at the bottom of the incubating chamber and is moistened by water in the pans a-4. The air then passes about the heating coils shown at the bottom of the egg chamber and then on up through the egg trays and finally out of the top of the chamber.

The next is Exhibit A-17, being the patent to Morgan, No. 591,870, which discloses little that is different from what we have already been over. The egg chamber shows two trays each with a movable bottom to enable the eggs to be tilted or rocked. There is a peculiar sort of control, consisting of a thermostat B′ which controls a supply of compressed air in a drum E′ shown in Figures 1 and 2.

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When the thermostat operates, it opens a passage to permit this compressed air to rock a series of levers which simultaneously open a damper in the top of the incubating chamber and also turns down the lamp wick. The thermostat also opens valves at the tops of pipes M-1, M-2, which extend to the bottom of the incubator so that when the temperature around the eggs becomes excessive, fresh air is admitted and at the same time hot air is allowed to escape in part through the damper at the top and the lamp is also turned down.

The next is Exhibit A-18, being patent to Bell No. 691,837, which shows an incubator house or a sort of outbuilding, as he says, with a gabled roof. Stacks of egg trays are put into the incubator and a lamp 13 down at the bottom is supposed to furnish the necessary hot air currents which pass up through the stacks of egg trays and produce incubation. Fresh air is admitted at the inlets 14 at the bottom of the chamber and the hot or foul air is permitted to escape at the top of the chamber, there being a thermostat 19′ which is opened when the temperature becomes excessive, to let the hot air escape. I don't see anything else about this patent that is particularly pertinent. There is a pan of water, shown at 20, to provide the requisite moisture.

On page 1, beginning at line 60, Bell says, "It is designed to support the eggs in trays 9 arranged in groups, the trays of each group being disposed one above the other, so that the ascending heat may affect all of the eggs."

The next is Exhibit A-19, being patent to Scott, No. 709,650, which shows two trays arranged on the same

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level, however, and having perforated bottoms. The heat is furnished by a lamp which heats air in a sort of container 12 above the lamp, and so arranged as to superheat the air. This drum or container 12 is connected through 13 with pipes in the top of the incubating chamber, which said pipes are perforated to allow hot air to escape in the top of the chamber. There the hot air is mixed with that air which is brought in through the down-turned ends of the pipe just below pipe 13. I think it is intended to be marked 15. Anyway, that air is permitted to come into the pipe 15 and escape through perforations and mix with the hot air from the heater in order to give the desired temperature within the egg chamber. This mixed air then passes down through perforations in a plate 18 thus reaching the egg chamber, and goes through the bottom of the egg trays, passing about those eggs from a higher to a lower position and going out at the bottom of the egg chamber into a space 20. It then passes upwardly and finally out at the ends of the casing. A thermostat controls the heat, which is adapted to raise or lower a sort of damper at the top of the heating drum and thus to let out some of the hot air and reduce the temperature. I will read a statement or so from the specification. Beginning with line 5, page 1, speaking of the invention, it says, "Its object is to provide improved means for regulating the temperature of the air in the incubator and also to improve the quality of the air admitted with respect to both the amount of oxygen and the amount of moisture therein. A proper supply of oxygen and moisture in the air admitted to incubators is essential." Beginning with line 43, page 1, Scott says: "When a hot air pipe is passed directly into or through an

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egg chamber the parts distant from the pipe are liable to be colder than the nearer parts, so that the equable temperature is not preserved." Those quotations show an appreciation for the necessity of having a proper temperature, proper moisture and an equable temperature throughout the incubator.

The next is patent to Perkins, No. 745,458, Exhibit A-21, and shows an incubator with one large tray for holding the eggs, which said tray is pivoted at its central part on a rod c2. In Figure 1 it is shown as tilted, in which position the eggs have all rolled as far as they can toward the left-hand end. At regular intervals, controlled by a clock, the tray is tilted so as to incline in the opposite direction, and the eggs then will roll as far as they can to the right-hand side and at the same time make about half a turn so as to provide the right turning movement to the eggs. This tilting is effected by solenoids which are alternately energized by connections controlled by the clockwork mentioned. Heating is effected by lamps in the upper part of the chamber and also in the lower part beneath the egg tray and the circuit to those lamps is under the control of one or more thermostats. Figure 4 shows a single thermostat controlling the lamps simultaneously. In Figure 11 there are two thermostats and the lamps above and below the egg trays are arranged in parallel circuits each under the control of its own special thermostat. The lower lamps may be used in testing the eggs at any time during the incubating period. The top of the incubator is provided with a glass cover and also with a plate P, which, when removed, permits an observer to look down

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through the eggs towards the lamps below and see whether or not the eggs are germinating. Figure 3 shows a reflector below those lower lamps which assists in throwing a light upwardly for this purpose. When the chicks are hatched they are housed in the lower part of the incubator, which part serves as a brooder. I don't see anything else in this patent. This patent is interesting principally because of the tilting principle.

The next is Exhibit A-22, being a patent to Perkins, No. 798.697, with the incubator best shown in Fig. 6. It is a long built-up affair on the order of sectional book cases and similar to the patent to Winkler, referred to, with the eggs carried on an endless conveyor. In Perkins, however, the eggs are placed in trays which are carried along on this conveyor, as shown in Figure 5. The various sections of the incubator comprise incubating chambers and are connected together with apertures through the partition wall through which the conveyor with the egg trays passes. To prevent leakage of the air from one of these compartments to the other, Perkins provides some flexible wiping devices which contact with the conveyor and thus prevent leakage. A curious feature is that the conveyor at substantially the center of each of the compartments, with the exception of the one at the extreme right in Figure 6, has a depressing roller which bears down upon the conveyor at the center of that chamber. As the conveyor approaches this depressing roller the egg tray will be tilted slightly in one direction, which will cause the eggs to roll slightly, and when the egg tray passes on up the other side of that depressing roller, it will be tilted in the opposite direc-

tion and the eggs will roll back again. As indicated in Figure 6 heat may be furnished by electric lamps and also by hot air. Anyway, it is some fluid heating medium which is conveyed through the coil pipes which are indicated in dotted lines in Figure 6. These are shown more clearly in Figures 3 and 4 as coils over in chambers at the ends or sides of the incubating chamber. Fresh air is admitted and caused to pass first over these heated coils into the top of the device from which it passes down by the heating lamps in the top of the chamber, where it receives additional heat. The air passes in that way through the eggs on this conveyor and finally goes out about the middle of the structure, as shown in Figure 3, through an opening in which the arrows are placed. The conveyor is moved along by an operator, who turns a crank, which turns one of the shafts carrying the sprocket wheels over which the endless chain passes. Perkins says that he may have as many as 24 of these separate compartments so that he can start at one end with fresh eggs and by the end of the 24 days have chickens coming out at the other end. Or he can have a fewer number of those compartments arranged in one horizontal row and get the same effect by building up a tier as shown in Figure 6, which shows a tier that has two sets of trays one above the other. Or, as he says, if he wishes to, he can still further shorten it up and correspondingly build it up with different tiers so that he gets his desired result by whatever arrangement he may adopt. Within each of the incubating chambers or cells he has the heating lamps specially controlled by a thermostat in that cell and he says by so doing he can

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provide for whatever temperature may be required at any particular point during incubation. Beginning with line 127 on page 2, the specification says: "Inasmuch as the temperature of the air to which the egg carrying trays are subjected must be varied at different times during the incubating period, the thermostat switch in each incubating chamber which encloses each batch of eggs for one day is so adjusted as to maintain this chamber at the temperature required for the eggs at this particular stage of the incubating period." On page 4, beginning with line 85, it says, "In the operation of the incubator the carrier is advanced to the extent of one tray space every 12 hours and a new frame and egg-laden tray are placed upon the carrier after the same has been thus advanced." In this incubator, therefore, we have eggs in all the various stages of incubation and we are taught that the eggs have different requirements in these different stages.

(Whereupon, an adjournment was taken until 2 P. M. of that same day.)

DIRECT EXAMINATION
OF
SAMUEL E. FOUTS
RESUMED

BY MR. O'BRIEN.

The next is a patent to Boyd, No. 828181, being Exhibit A-23. It shows an incubator having an outer casing and an inner casing for the egg chamber with two trays indicated therein. Fig. 2 shows fresh air admitted

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at the lower right-hand corner at 4′ and passes in through the bottom of the said egg chamber and up through the trays and out at a point k, which is shown in that Fig. in dotted lines, but, perhaps, better shown on the second sheet in Fig. 3, the pipe k extending outside the outer casing and then being twisted about so as to have its final discharge end at 7′ some place quite remote from where the fresh air is taken into the incubator so as to prevent contamination.

The incubator is heated by a lamp which heats up a drum which in turn is connected by a pipe e with the space c which surrounds the egg chamber. A thermostat is provided which controls a damper above the lamp, or heater, and thus maintains a constant temperature. The products of the combustion coming into that space c containing some carbon dioxide, settle down in a sort of a well g, shown at the bottom of Fig. 2 at the right of Fig. 1, and from there pass up through pipe h and escape out of the top.

The specification beginning with line 12, page 1, reads: "The leading object of the present invention is to freely discharge the foul air charged with carbon dioxide from the egg chamber in such a way as to reduce to any desired extent the draft through the egg chamber and at the same time to utilize the tendency of the heated air to escape at the top of the chamber and also to provide for keeping the egg chamber supplied with heated fresh air."

Beginning at line 27, the specification reads:

"Another object is to equalize the distribution of heat within the incubator, so that the temperature of the egg chamber shall be uniform throughout."

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The next is a patent to Koons, No. 916,454, being Exhibit A-27, which shows a single egg chamber at 51 in Fig. 3. A lamp supplies heat, the chimney of which projects upwardly into a heated chamber 12, which is shown more clearly in Fig. 5. The products of combustion and the hot gases pass through this chamber 12 substantially to the other end from where the lamp is located and there it passes through an opening into another hot air chamber 13 parallel with the chamber 12, which leads back and is connected with a sort of a drum 19, or funnel-shaped member 19, through which it is led to the outside. Fresh air is brought into the incubator at a point 7, shown in Fig. 7, just below the heating member 12 and in a chamber 4 which surrounds the heater member 12. The air when heated passes up through passages 80 and 81 to the top of the incubating chamber 5 above the egg tray. The air warms the eggs and settles down through the open mesh bottom tray supporting the eggs, or at least a part of it does, and the air then goes out at the right-hand end, as shown in Fig. 7, through the passages 54, one of which is above and the other below the egg tray. In other words, part of the gases go through the egg tray, and part does not. There is a more or less conventional thermostat 34 within the incubating chamber 5 which controls a damper 22 above the heater. The specification states, at line 83, on page 4: "Any suitable means can be provided to supply the desired degree of moisture in the hatching chamber." Below the incubator proper, as shown in Fig. 1, there is a brooder section 2 which receives heat from the in-

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cubator heater and the young chicks may be placed in the said brooder.

The next is a patent to Klinke, No. 949,653, being Exhibit A-28. This patent is for an incubator but discloses very little that does not appear in the other patents. The incubator is warmed by a lamp 26 which heats water in a boiler on the right-hand end, as shown in Fig. 1. The boiler is best shown in Fig. 2 connected with the heater which is above the egg chamber. The heater is of rather a peculiar construction. The part referred to as being kite-shaped is an opening in the middle, the idea being to concentrate the hot water principally at the corners, with which arrangement better results are obtained. Below the egg tray 11 is the brooder section at the bottom of which fresh air may be admitted and which is controlled by two slides 16, the air then passing to the top of the incubator to be discharged through a flue 5. A peculiar sort of door is provided to close up one face of the incubator, but is of no interest to us.

The next is a patent to Zimmer, No. 1,075,747, being Exhibit A-29, and is an interesting patent and requires study. There is a sort of cylindrical hatching chamber, or incubating chamber 2 which is surrounded with a water jacket 3, the water therein being heated by a lamp as shown at 19, which in fact heats a jacket around the lamp flue which former is connected at its top and lower portion with the water jacket around the incubating chamber.

Eggs are placed in the bottom of the chamber of which the top is a sort of a lid which is removed when the incubator is being charged. There is a layer of eggs

put in the bottom. Zimmer is trying to follow nature as closely as possible so he provides feather mats and after putting a layer of eggs in the bottom of the chamber a feather mat is placed on top of them. In one day after this layer is put in it is taken out again and a fresh layer put in at the bottom with the old layer placed back on top. He superimposes them in that way so that once each day he lifts up the eggs that are in the incubator and puts a fresh layer on the bottom and thus he has eggs in various stages of incubation and in superimposed trays. He keeps that up for 12 days, then he lets the whole incubator stand for two days. He then opens the incubator and takes out all of the eggs and puts them back in reverse order from what they had previously been. Or, in other words, the eggs farthest advanced in point of incubation are put in the bottom; the eggs in the next stage are put on top of that and so on up to the eggs which were the last set.

Connected with the incubator, as best shown in Fig. 2, is a sort of brooder attachment which is connected with the incubating chamber by an opening passing through the lower part of the incubating chamber, with a door which can be controlled so as to close up this passageway or open it up as may be desired. The specification at line 10, page 1, says: "This invention is an improved incubator, which I term a semi-fireless incubator, and by means of which the animal heat of the eggs which, after having been partially incubated, by artificially or externally applied heat, may be used for incubating other eggs supplied the incubator from day to day, one object of my invention being to effect improvements in the

(Testimony of Samuel E. Fouts)

construction of the incubator, whereby a uniformity of heat may be maintained."

In the incubating chamber is a more or less conventional thermostat which controls an outlet at the top of the said chamber so as to emit hot air if the temperature becomes too high. On page 2, line 37, it states: "In practice my incubator is preferably made of such size as to provide a capacity for a thousand eggs." Then in column 2, beginning with line 75, there is a description of the manner of charging this incubator which I gave in my own language above and a part of which I will read, beginning at line 101 on page 2, which relates to what happens after the twelfth day point in incubation has been passed: "By this time incubation has so far progressed in the eggs of the upper layer that there is circulation of blood in the embryos of that layer and the said layer gives off considerable animal heat. At this point in the period of incubation the lamp is extinguished and the incubator allowed to cool gradually, and when it has become partially cooled all the trays containing the eggs are taken out of the incubator and a mat of feathers is placed in the bottom of the incubating chamber. The eggs are now replaced in the incubating chamber in the reverse order to the former arrangement, that is to say, the oldest eggs in point of incubation are placed in first at the bottom of the superimposed trays or layers of eggs, the newest eggs being on top. Hence, the eggs in which incubation has progressed so far as to cause them to give out animal heat are below the other eggs and this animal heat is utilized to maintain the required temperature in the incubating

chamber and continue the hatching of all of the eggs. The artificial heating may be wholly or partially discontinued or may be progressively reduced from day to day, according to the conditions."

Next is a patent to Olson, No. 1100146, being Exhibit A-30 and which does not provide very much of interest. It shows an incubating chamber which has heat provided from a lamp which heats a sort of boiler or member 15 with which the hot air pipe 23 is connected and is extended into the incubator chamber. The main hot air pipe 23 passes centrally through the incubator chamber almost to the far end from the lamp where it divides and the divided portions 25 are curved about and led back parallel with the main pipe and connected with a sort of a funnel-shaped member 31 which is directed upwardly so that the air going into this member 31 passes in a vertical direction, which movement of the air there aids in drawing out the foul air from the incubating chamber. As indicated in Fig. 3, the air entering the incubating chamber passes over or through a member 3 where a cup of water is placed and from there the air passes up through a pipe 7 and connects with a thimble 9 in the end of the incubator chamber through which the pipe 23 extends, as I have previously described. Fresh air gets inside of the chamber about the hot air pipe and is admitted by it and settles down through the egg trays, although no trays are shown in the patent, but I assume that there would be some. Anyway it settles down to the bottom of the incubator and then passes out at either end at the point 2 and ultimately to that funnel-shaped member 33 to which I have previously referred. A con-

ventional form of thermostat inside of the incubating chamber controls the valve over the heater and thereby regulates the temperature.

Next is a patent to Van Keuren, No. 1160793, being Exhibit A-32. Fig. 2 shows a transverse section through the incubator, the interior of which latter is partitioned into three parallel chambers. At the center there is the heating chamber within which the heating device shown in detail in Fig. 6 is partially inserted. A lamp heats the incubator with its products of combustion passing up through the drum 23, as shown in Fig. 5, and then through a sort of hairpin-shaped pipe 18 within this central chamber. The hot air coming from this heating device within the central chamber passes downwardly below the lower edges of the side partitions of the said central chamber and thereafter rises up through the incubating chambers at either side and passes through the egg trays therein and about the eggs and then the hot air passes out at the top through what is called a ventilator. Fresh air passes in around the heater and through a sort of a thimble 26 and thus gets inside the heating chamber of the incubator. Below the heating chamber is a brooder section where the young chicks are placed. This patent is interesting because of the division of the interior of the incubator where the space is divided into the said three parallel compartments, the central one of which is the heating compartment and from which the air passes to the right and left below the walls of the heating chamber and then ascends through these parallel columns into the ventilator at the top.

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Next is a patent to Fullington, No. 1205445, being Exhibit A-34, for an incubator attachment. There is nothing of any particular interest in the inter-incubator structure, but this said attachment is a device for blowing air into an incubating chamber. It comprises a fan 12, shown at the right of Fig. 1 and in detail in Fig. 3. The fan is driven by an electric motor and discharges air into the incubator through a pipe 18 with the air being projected into a sort of trough with a perforated bottom, as shown in Fig. 2. Above the perforated bottom of the trough is a pipe 17 with a sort of a funnel end 19 through which the air is led back toward the fan. This air, however, is led out of the system through the peculiar structure shown in Fig. 5, or in other words the foul air passes up through the passage 17 b and out at 17 a. Fresh air is brought in at the passages 20, shown in both Figs. 1 and 5, and is led to the fan and forced into the egg chamber. A peculiar sort of an electric thermostat for controlling the heat of the lamp is provided.

The next is the German patent to Mann, No. 117089, being Exhibit A-35. No translation is provided and I cannot read German, but the drawings indicate that it is a simple incubator heated by a lamp. The heat and products of combustion from the lamp pass through a pipe D′ to the incubator interior where it is connected with a sort of a rectangular pipe structure. Towards the other end of the machine this rectangular pipe structure connects with a discharge pipe D^2. This said rectangular pipe structure D is evidently the heater, or the means for furnishing the heat, above which is the in-

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cubating chamber wherein two shelves are shown which I think are egg trays. On the lower shelf there are three egg-shaped objects.

Fresh air is brought into the bottom of the incubator and passes up through passages G in the middle of the bottom of the egg chamber and from there passes up through the egg trays and goes out at the top of the egg chamber. That is practically a complete description of this incubator.

The last patent relating to the specific incubator art is the German patent to Stulik, No. 155917, being Exhibit A-36. It shows an incubator with a series of egg trays b, arranged one above another with eggs therein set at different times so that at one time there will be eggs in the incubator at various stages of incubation. The translation of this German patent states that at the point k heat is furnished by some suitable source, using a lamp. The heated gases or the heat from the lamp goes up into the heating chamber i through which chamber there is a vertical pipe C which extends down below the incubator and upwardly within the egg chamber. Fresh air coming in at the bottom of this pipe and passing through the heating chamber i is heated and delivered to the bottom of the egg chamber below the lowest rack. The heat or gases from the lamp pass upwardly out of the heating chamber i around the pipe C through a passage m surrounding the said pipe into a space y and then goes through some pipes n which extend up through a water jacket surrounding the incubating chamber on all sides except the front side where there is a door. The products of combusion and heated

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gases, after passing through the pipe n and the water jacket enter the chamber x and then through a passage v to the outside. A conventional type of thermostat in the top of the egg chamber controls the gases within the heating chamber. Chickens which have been hatched can be placed in brooders which surround the heating chamber i on three sides.

In the operation or setting of this incubator a tray of eggs is placed in the bottom. After some time these eggs are removed and put into the next higher compartment. It will be quicker and more accurate to quote from the specification at line 4 on page 3, which reads as follows: "In the operation, first of all, the lowest incubating compartment is filled and after some time the lowest compartment with the eggs is removed and put into the next higher compartment. The eggs can also be simply placed in the next higher compartment. Then follows the repeated filling of the lowest compartment. This procedure is repeated so that grandually the individual groups will pass to the topmost compartment. There can be connected with the air outlet d in the usual way an apparatus o which, dependent upon the heat in the topmost incubating compartment, regulates the heating by means of the lever mechanism p, in that it opens or closes the closing flap q for the outlet l of the heating chamber i more or less."

We, therefore, have in this patent still another instance of eggs in the incubating chamber in various stages of incubation with the eggs arranged in a series of superimposed trays with the heated air, as in the case of

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Stulik, passing through the egg trays from the bottom up. In such a case the hot eggs will be at the top and the fresher eggs at the bottom.

The next is a patent to Endemann, No. 120253, being Exhibit A-2. I consider the reference to be a pertinent one so far as the circulation of air is concerned through the chamber. This patent shows an apparatus for drying various kinds of substances and mentions specifically, fruits, meats, etc. The substances to be dried are placed on trays in a chamber which at its bottom connects with a heating system or steam coil G. The top of the drying chamber connects with a suction fan D and when this fan is in operation it draws a current of air first through a sort of packing G', which is intended to take out dust, and then on to the heating coil G where the air is heated. It then passes through the fruit or meat, or whatever may be on the trays, and dries them and then the air is drawn out by means of the sunction fan. The patent shows valves here and there in the passages by which the current is controlled to obtain various effects. This shows the broad art of heating and ventilating as applied to the drying of substances.

(Whereupon counsel for plaintiffs made an objection and took exception to each one of the patents introduced, or to be introduced by defendant relating to fruit drying and tobacco curing and the like.)

The next is a patent to Jones et al., No. 152,644, being Exhibit A-3, for a fruit dryer. The patent is interesting because it calls for a series of drying chambers arranged side by side with trays or shelves positioned in these chambers upon which fruit or other substances is placed. In

the bottom of this structure is an air heating furnace, as shown in Figs. 1 and 3, from which air passes up to a header extending underneath all of the said chambers below the series of trays. At the top of each chamber is an exit for the air, and an inlet and outlet from each chamber simultaneously controlled and connected together as shown in Fig. 4. The outlet passages from the drying chambers connect with the transverse header at the top and a vertical riser H′ connected with the lower end of which is a suction fan which in turn discharges through a connection D′ with the furnace as shown in Fig. 2. By this arrangement certain valves shown in the drawing get the flowing air current to go through one compartment to the exclusion of all others or go through all of them or they can be all shut off and when the latter adjustment is made the fan is merely short-circuited around through the corridor and down through the vertical passage to the fan and back to the furnace again. You can get all sorts of effects by a manipulation of the valves.

The next is a patent to Knowles and Proctor, No. 410110, being Exhibit A-11 for a drying machine. The patent says that the invention is not confined to the drying of any particular kind of material but relates with equal force to any matter which can be so distributed through the drying room as to provide numerous air spaces more or less uniformly disposed throughout the room. The material to be dried may be supported or hung on poles or hangers in the drying room, or it may be placed on racks or trays. The patent shows the device drying yarn which is hung upon poles or supports

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at the center of the drying chamber C at the right-hand end of which is a heating chamber G with a heating system therein resembling steam coils, or something of that kind, producing heat. Hot air rises up through this heating device in the heating chamber and above which device is a fan which takes the air rising from the heater and projects it over the top of the drying chamber from and through perforations in the top wall of the drying chamber. The heated air thus goes in at the top of the chamber and passes through the material to be dried and goes out through a perforated floor down to a return passage D, from which it is led back through a door N into the bottom of the heating chamber. At the back end of the apparatus is an outwardly opening door O and in the other end thereof are outwardly opening doors L and M, by the manipulation of which may be obtained varying results. Assuming that yarn is to be dried and is hanging on those poles. A beginning would be had by closing up the outside doors and running the fan and thereby air would be circulated through the heating chamber and through the drying chamber and back again to the heating chamber in a closed circuit. That is continued until the air absorbs enough moisture from the yarn, or so much moisture, that no more drying can be accomplished. Then the door O is opened and the door N is closed and by running the fan all of the moist air can be blown out. By various manipulations of these doors all of these varying results can be obtained. Figs. 3, 4, 5, 6 and 7 show different specific arrangements of the various parts making up the machine and all work much the same way and, in fact, most

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of these Figs. really show the same machine with the doors in different positions so as to get different effects. In Figs. 3, 4, 5 and 6 the fan is in a horizontal position but in Fig. 7 it is in a vertical position over the heating device and drives a blast of air downwardly in the heating chamber from which it passes through the drying chamber and is returned to the fan, which constitutes a circulation a great deal like that which we have heretofore discussed.

The next is a patent to Proctor and Knowles, No. 432282, being Exhibit A-12, for a drying machine having three compartments made up of vertical partitions near the center with the end compartments sub-divided by horizontal partitions so that five chambers are disclosed. The central partition is a heating chamber in which is a steam coil F. In the horizontal partition on each side of the heating chamber is a fan which is so mounted and driven as to draw air from the upper chamber down into the lower and then through a door I' into the bottom of the heating chamber from where the hot air goes through a door G into the top of the drying chamber. Various doors are arranged much as in the manner shown in the patent last described, and by the manipulation of which said doors the air can be turned into any of the rooms or discharged outside and fresh air brought in, and various kinds of results effected. This patent likewise states that the invention is not confined to any particular kind of substance, although it does specifically mention yarn, which is to be hung upon the support L.

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The next is a reissue patent to Proctor, No. 1,1460, being Exhibit A-13, for a drying machine which is designed primarily for drying stockings stretched over forms which are shown in the drawing.

"The circulation of air in the apparatus is rather interesting because it is similar to that of the Smith incubator."

There is a heating device shown in Fig. 1 at the left of the apparatus and this heating device is in a chamber which has a partition, or which is set out from the main drying chamber and which does not extend all the way to the floor, but leaves a space C at the bottom of the said partition. In the upper portion of this partition is a fan so mounted and so turned as to draw the air out from the heating chamber into, or through, the passage C at the bottom of the partition and up through the drying chamber, through the fan and down through the heating member. At the top of this heating section or chamber is an outlet to the outside air so that part thereof will leave the main circuit, or may leave the main circuit, at the opening and pass outside. Fresh air enters the drying compartment whenever one of the trays which contains a stocking is drawn outwardly, as indicated at the center of Fig. 1. On page 2, beginning at line 131 it says: "It may be here remarked that the fans may be located at the bottom instead of the top of the enclosure A, in which case the direction of the circulation of air will be reversed."

Next is a patent to Schwartz No. 555,175, being Exhibit A-14, for a method or an apparatus for ordering tobacco, which means, as I gather, from a study of the

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patent, a moistening of the leaves of the tobacco so that they will not be brittle and crack and dry and break, but can be handled without any such difficulty. Fig. 1 shows an apparatus where there is a chamber at the left with some coils of pipe in it, at the top of which is a shaft b driven by a pulley, with a fan on the inner end and located in the top portion of a partition a^2. Below this partition is a passage 23 leading back to the bottom of the first mentioned compartment, designated as a. The fan drives a current of air down through the compartment a about the coils C^1 over a pan of water C and through the passage a^3 to the bottom of the chamber in which the tobacco is hanging. The current being moistened by the water from this pan passes up through the tobacco, which in the beginning we will assume is very dry and brittle, and which attracts the moisture from this humidified air and so becomes ordered. "There is a circulation which is similar to what we have seen before and which is similar to that in the Smith patent."

The coils C' are not steam coils but are cooling coils, it being Schwartz' idea that cool air will take up more moisture, especially if at the same time the water in the pan C is heated by steam coils c^2, which gets the water reasonably hot in the pans, and when this cool air comes down on top of it a great deal of moisture is taken up and carried over and delivered to the dry tobacco. The tobacco is hung from a sort of frame work mounted on a truck, which is run into the chamber on the right-hand side of the heating compartment. Then follows some other Figs. which show a somewhat modified structure

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which are not very interesting. On the last two sheets of the drawings 5 and 6 is an arrangement which I wish to describe briefly. At the center of the structure is a corridor.

"THE MASTER: There has to be some apparatus to carry out the process. I don't see the value or the pertinency particularly of testimony as to structure unless it is in some way connected with the process that the witness has defined as being the Smith process because claims 4 and 5 are not in issue.

MR. O'BRIEN: Of course, as your Honor says, the witness can't describe the process without talking about the apparatus.

THE MASTER: The only thing is I noticed from the testimony that the discussion by the witness is as to structure without considering it in connection with the process. I asked the witness what he considered to be the process disclosed by Smith and he stated it to me, giving some four or five steps here. This testimony as to these structures, without any effort being made to identify it in some way with the Smith process, as far as I am concerned will not be considered.

MR. O'BRIEN: Of course, he will follow it up. He, first, refers to the structure and then he describes the process.

THE MASTER: I had noticed as to a good many of these structures that there has been nothing said as to this process which you contend the patents either anticipate or limit in some way.

MR. O'BRIEN: I will ask the witness to describe the process carried out by this practice.

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THE MASTER: He describes here, and to a large extent it is obvious, what the particular construction is as to thermostats and openings and so on and the particular structural features. But, unless you make some effort to show how these particular structures either anticipate or limit the process defined in the Smith claims, I don't see its pertinency. I am permitting you to make a record of this, as you say probably this case will be reviewed. However, as far as making a record is concerned, you will have a good deal of difficulty in getting a reviewing court to examine a large mass of detail and analyze it and pick out those particular parts that they think are pertinent.

MR. O'BRIEN: The question involves a comparison of the processes in these patents cited with the process of the Smith patent; and I assume the witness is doing that and I think he has done it heretofore, and I would instruct him to do that."

At the top of the said corridor is a fan so mounted and driven as to draw air up through it and charge the air into the top of the apparatus where it spreads out right and left and passes across the roof and down through passages or corridors, or chambers, to the right and left sides. These latter chambers are separated from the drying chambers d by partitions which terminate short of the lower end so that the air passes down around these partitions and then up through the drying chambers at each side of the central corridor. As the air progresses down these outer positioned chambers it is humidified and cooled and made to take up moisture from the water pans

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and then carried into the tobacco which is hanging on rods and supported by trucks in the drying chambers.

As to the similarity or dissimilarity between this and Smith, I will point out that here we have a case which is not quite so close to the exact Smith circuit as some of the others. Nevertheless, we have here a central corridor, with a fan so arranged as to cause a current of air to flow up the corridor, across the top of the drying chamber and then down and through the said drying chamber. Of course, there are no egg trays and the circuits are not precisely the same as they are in the Smith patent but the general direction of the flow of the air is similar.

Fig. 1 of the Schwartz patent indicates a blast of air driven downwardly in a corridor. The air then passes beneath a partition at one side of the corridor and issues through an opening C at that point in the bottom of the chamber at the right thereof. When it gets into that chamber the current rises through the chamber and comes in contact with all of the articles therein which are to be treated by it and, from the top of the said chamber the air passes into the fan and is then returned down toward the compartment. "That is, as I think I said before, very similar to the circulating method followed by Smith."

The next is the patent to Proctor, No. 553,723, being Exhibit A-15, for a structure and a method, so far as concerns the circulation of the air, which is almost identical with that of the Smith patent in suit. The interior of the apparatus is divided by vertical partitions so as to have a central corridor B. At the top of this

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corridor is a fan so mounted on a vertical shaft and so driven as to force a current of air downwardly to the bottom of the corridor where it mushrooms out to the right and left and passes under the lower edges of the partitions b, b′ into the bottom partitions d′ d′ of the moistening chambers c, c′. From there the air is forced upwardly in a directed current through these chambers to issue at the top into a space above the fan so that it can be again sent forward on the cycle that I have just explained, or in other words, the air is circulated and recirculated. Proctor was particularly concerned with ordering or moistening the tobacco, which is the purpose of this invention. The tobacco is supported upon carts or trucks which are run into the drying chamber. Having in mind the purpose of moistening tobacco, it is desirable that air be circulated in contact with the tobacco which is to be moistened and that is the reason Proctor provides a humidifying structure, as shown in the center of Fig. 2 and which consists of a jet of water which strikes against a revolving fan and thus scatters the water around in the manner of a rain storm. This takes place in the central corridor and the water is supposed to be absorbed largely in the air and carried around through the tobacco with any surplus thereof being drained into the trough h^2 at the bottom of the central corridor.

The next is a patent to Verna, No. 891,019, constituting Exhibit A-25, for a drying room. Page 1 of the specification states that the invention relates particularly to a machine for drying alimentary paste or dough used in the manufacture of macaroni. Fig. 4 discloses a central partition which carries cleats 3 for supporting either

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a series of drawers 5 and 6, as shown in Fig. 5 at the right, or the same cleats may support those cross pieces 8 upon which the poles 7 are laid and which in turn may support the macaroni, as indicated in Fig 5, looped about them, or it may be laid in these trays over on the other side of the partition. Fig. 2 indicates that a fan circulates air throughout the apparatus by driving the air downwardly through a sort of passage structure 16 whence it reaches the bottom and then proceeds through an opening 22 in the wall of the chamber 4 in front of it, as designated in Fig. 4. Air is introduced at 22 and passes over across, up through the macaroni hanging on the poles and over also to a sort of structure which seems to be more in the nature of something to support the cleats than to form a partition, because the air seems to go right through it and up through the bottom of the drawers which may contain the macaroni and then passes out at the top of the drawer compartment through an opening 26 into a chamber 30 at the side of the fan chamber shown in Fig. 1 and from there passes through an opening 31 to the fan so as to produce a continuous current of air. In other words, air starts from the fan, goes down to the bottom of a chamber, underneath a partition, up through materials which are to be treated in another chamber and then back to the fan located at the top of the chamber, and thus constitutes a circuit very similar to the circuit of the air current in the Smith incubator.

The next is a patent to Goldstein, No. 1,137,752, being Exhibit A-31, for an apparatus for curing or artificially aging cigars. The box-like container has an

outer wall and an inner wall so as to have an inner chamber 7 in which the cigars are to be cured and the top and bottom of which said chamber are perforated. At the right is a corridor or compartment in which rests a heating member 11 composed of steam coils. In this same chamber is a fan 12 so mounted as to drive a current of air upwardly and then above the fan is a humidifying tank. The air starts at the lower end of the corridor or compartment, passes up by the heater, becomes hot, goes by the fan, is driven up by the humidifying device, where it takes on the necessary moisture, over the top of the perforated ceiling, down through it into the curing chamber 7, out of the bottom and back where it started from, thus constituting a continuous circuit from the top downwardly through the curing chamber. The patent calls for various kinds of controlling devices, thermostats, hydrometers and humidifying tanks, relays and so on, which are so arranged and so adapted as to control very nicely the temperature and the humidity. That is done electrically and is supposed to be quite exact so that these various conditions may be nicely maintained. So far as the air circuit is concerned it is the reverse of that of the Smith patent since it passes upwardly through the heating chamber or corridor rather than downwardly with the fan being simply turned up instead of down, which means that the air passes through the chamber 7 where the cigars are cured, from an upper to a lower direction.

The next is a patent to Bate, No. 240,004, being Exhibit A-4, for a refrigerator. Fig. 1 shows the device divided by a vertical partition in which there is an open-

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ing d near the lower part. The articles to be treated or stored are positioned in the chamber A where there is a fan which takes the air from that chamber and drives it through an opening in the top of partition B into the top of the chamber C. The air then passes down through this chamber to a point near the floor, at least where it goes through the aperature d, and returns to the main compartment A. Bate was concerned with controlling the temperature, such as is desired in refrigeration and not in the incubation of eggs, but, nevertheless, he has an apparatus to produce the temperature desired. He drives a blast of air over the temperature controlling device and carries the air which then has the desired temperature into the room where the articles to be treated or preserved are situated. The air circulation is substantially the same as it is in the Smith patent structure. Figs. 4 and 5 of the Bate patent show an extension added to the intake of the fan, or to the discharge pipe of the fan which enables the air to be picked up or discharged into any part of the chamber A as desired.

The next is a patent to Osborne, No. 886,325, being Exhibit A-24, for a heating and ventilating apparatus. There is a large building in the lower part of which, as shown in Fig. 1, is a heating plant designated E. There is a boiler to the left of this Fig. designated as A which is connected to the heating coil so that in the lower part of the whole system there is a room which is heated by this plant E. On the floors above are various outlets or connections with this heated room. A passage c is shown at the lower right-hand corner through the wall from this heating chamber to the room above, im-

mediately to the left of which is a similar passage opening towards the observer and running up to the second floor above. These passages emerge, or open, into the rooms at a level which is substantially that of a person in the room, who is thus enabled to breathe pure air. The patentee considered it a good idea to take care of the carbon dioxide which he might exhale, which being heavier than the air would sink to the bottom of the floor, and which he proposes in some way to expel from the room. He has also made provision to dispose of any water vapor and other gases which may get into the room and which are lighter than the air and thus go to the top. This air circuit is not so close to the air circuit of the Smith structure as some of the other references which I have discussed, and more particularly the patents to Schwartz and Proctor, being Proctor No. 553,723, and Schwartz No. 535,175.

The next is a patent to Freas, No. 1,165,958, being Exhibit A-33, for a heating system for constant temperature baths. There is no air circulatory system, which is as near the Smith as some of the other patents which I have just alluded to and I do not think that I will describe this patent further, but the patentee proposes to provide a room 12 in which he can raise bacteriological cultures and for which purpose it is necessary to have the proper degree of humid temperature. There is a suction fan shown in Fig. 3 at the left to draw out the air and there are heating coils at the bottom of the chamber. But I do not find in this patent, a circulatory system which is as close to Smith as some of the other patents.

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The next is a patent to Hawkins, No. 725,079, being Exhibit A-20, for an electric street car with a scheme to heat the car and to have a circulation of air for that purpose. Underneath one of the longitudinal seats of the car is an electrically operated blower 6 shown in Fig. 3, and the air from that blower comes in the compartment 4 from various places and which said compartment is referred to as a settling chamber. The air is then blown out through the blower 6 and simultaneously heated by a series of heating elements ranged around within the fan casing. The air proceeds down through pipe 11 and then through branch pipes 12 extending from pipe 11 out to registers 13 in the bottom of the floor from where the air rises and passes out at the top of the car through a sort of chimney 31, as shown in Fig. 1. Because no closed air circuit is shown this patent is not so close to the Smith invention as some of the other patents referred to and discussed by me. This constitutes all of the patents which relate to the art of heating and ventilating. Some other patents have been cited and entered in evidence which are for the purpose of turning eggs in storage and are thus similar to the rack structures which Smith uses in his incubator.

The next is a patent to Conant, being Exhibit A-7 which does not seem to disclose any means for circulation of air. It shows a series of racks which can be tilted or rocked from time to time when placed in a storage warehouse, in order to preserve eggs, but there are no air currents disclosed here. In other words, it is simply a device for holding and tilting holding racks and similar in that respect to the Smith patent. The

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same is true of the Cutting and Christianson patents in which latter patent are shown a series of racks disposed in tiers one above another with no idea of air circulation involved.

There is still another patent, to Coons, being Exhibit A-26, for a set of book shelves to hang on a wall and which can be lowered into the position shown in Fig. 2 to receive books, or which can be collapsed flat against the wall so as to conserve space. This patent has nothing to do with the circulation.

(Whereupon an adjournment was had until 10 A. M. Friday, March 28, 1930.)

DIRECT EXAMINATION

of the witness,

SAMUEL E. FOUTS,

resumed by Mr. O'Brien:

Before proceeding with an answer to what is found in the Smith structure and process, if anything, not found in the prior arts, I wish to state that I have not read the record of yesterday, or talked with counsel, but it occurs to me that I have omitted to include while describing the Smith method, and as part of that method, the feature whereby the air current is created by means other than changes of temperature and which said factor is a necessary feature of the Smith patent. In Smith there is some kind of a mechanical circulation, or forced draft, and if that feature is excluded then the whole method is found in Zimmer. I may have stated the Smith method a little too broadly, so I want it understood that it includes a forced circulation of air.

(Testimony of Samuel E. Fouts)

I find the Smith method, as defined in claim 1, in the prior art and the methods disclosed therein, and particularly in the patent to Zimmer, which is defendants' Exhibit A-29, with this one exception that Zimmer does not supplement this draft of air by means other than differences of temperature. In other words, Zimmer depends upon differences of temperature to produce an upward draft from the hot eggs in the bottom of the incubating chamber to cause the hot air coming from these hot eggs to pass upwardly through the cooler eggs above and cause their incubation. Zimmer further shows it is not new to have eggs arranged in tiers with trays containing eggs in different stages of incubation with the hot eggs at the bottom so that the heat generated in the later stages of incubation may be carried upwardly through the cooler eggs above so as to warm the latter. The same is true in the patent to Winkler, Exhibit A-6, except that Winkler does not have his eggs in separate superimposed trays. In Winkler the eggs are carried in a conveyor which twists about in different convolutions, one above the other, and in that way the eggs are in different stages of incubation in different parts of the incubator, and with the colder eggs above so that the heat generated in incubation of the hot eggs is utilized to help heat the cooler ones. In fact it is quite common to have the eggs arranged in tiers so that the heated gases pass upwardly from the lower tier through the entire stack and out at the top.

It is old, as shown in the Van Kueren patent, Exhibit A-32, to have the tiers at the ends of the incubating chamber with a corridor between them, and in which cor-

(Testimony of Samuel E. Fouts)

ridor the current of air has its origin, so that it passes from that corridor or chamber outwardly under the partitions at its sides and thence upwardly through the tiers of eggs at the sides.

I find that it is not new to cause the air to circulate within an incubating chamber by a forced draft and which arrangement is shown in the Fullington patent, Exhibit A-34.

So far as a new patent is concerned, the nearest approach to the method of claim 1 of the Smith patent is the Zimmer patent, and all that it lacks is some means, such as Fullington discloses, for accelerating the draft upwardly through the egg chamber by some sort of mechanical means.

As to any comparison between the defendant's process or method and the Smith process or method, I have already described the latter and so will take up the structure of the defendant's incubator and the method practiced by it. The structure is substantially as shown in the model in evidence, defendant's Exhibit C, and which shows the relative arrangements of the various elements and instrumentalities present in the Robbins incubator. It will be noted that the fans stand in a vertical plane close to the rear wall of the incubator chamber and rotate in the same direction and on horizontal axes. The egg trays are in front of and between the fans and front door or doors, with a space of approximately a foot between the said fans and the rear parts of the egg trays. The hatching trays are at the left end of the incubator and are supported in a rack there so that the right-hand part of the rack, when viewed from the front, creates a

(Testimony of Samuel E. Fouts)

sort of a fore and after obstruction there. Nevertheless, the space where the hatching egg trays are placed is in open communication with the rest of the incubator chamber. So there is no partition between the hatching portion of the incubator and the main incubating portion thereof. With the fans situated at the rear and operating in a vertical plane the blades thereof are given a pitch so as to tend to propel the air forwardly towards the front doors and towards the egg trays whether they be in the hatching portion or in the incubating portion of the machine. The diameter of the fans are made as large as they can be made to operate freely where they are placed, that is, to enable the blades to swing around close or adjacent to the side wall and reaching over until the blades of one fan almost reach the orbit of the blades of the other fan. Consequently, owing to the position of the fans and their size, the air will probably be thrown outwardly by centrifugal action as well as forwardly due to the pitch of the blades, and it may be, and probably is, true that the air is carried in a forward direction along and adjacent to the ceiling and floor and the side walls until at least some of it reaches the front walls or doors of the incubator. Then, because the air cannot leave the incubator in front it must go somewhere else and it would seem to be carried backwardly toward the fan in some circuit which I would not want to try to define. It must go back there however because there is no other place for it to go.

There are some openings at the rear of the fan through which fresh air can enter with an exit in the roof over the hatching portion where foul air can escape. Pro-

(Testimony of Samuel E. Fouts)

visions are also made for obtaining the requisite temperature of the air and the requisite moisture. The egg trays in what may be termed the incubating portion are mounted on tilting racks which are operated by a worm and screw arrangement so that they can be held either in a horizontal position, as when the trays are set, or can be tilted to either side of the vertical or horizontal line so as to cause the eggs to be turned during the period of incubation, which is once or twice a day in common incubator practice.

Two things are kept in mind and observed while loading the defendant's incubator. In the first place there is maintained a balance between the upper parts of the tilting racks and the lower racks so as to facilitate turning or tilting the said racks. For instance, if a tray is placed in the upper half at the same time another is set in the lower half at an equal distance from the central shaft so as to maintain a balance at all times. In the second place, when placing the eggs in the defendant's machine they should be scattered or dispersed as far as is practical or possible. That is, if a tray of eggs is placed above the supporting shaft there will be another tray at the same setting which is placed below the shaft an equal distance from it to maintain the balance, and in no case will another tray of the same setting be placed immediately adjacent to either of those trays. I believe it is true, as Mr. Taggart pointed out, that at any one setting there are only about one-sixth of the trays placed in the machine. After the operation is once fully under way, about one-sixth of them will be taken out and removed to the hatching trays and the places thus

(Testimony of Samuel E. Fouts)

vacated will be filled with fresh eggs, so that at any one time there will be presented to the front door the trays more or less edge on and for every tray which we will say contains hot eggs, or those in the most advanced stages of incubation, there will be five other trays which we might term cold trays, and these hot egg trays are scattered or dispersed just as widely as possible, thus avoiding any large nucleus of hot air. In other words, instead of having them bunched in any one place where there would be a source of considerable spontaneous heat, they are scattered all about just as widely as possible. In regard to the way in which the air travels in the defendant's machine, we might try to visualize a particle of air, some concrete thing which we can see, follow it about and, in doing so, start with the particle out somewhere near the center of the right-hand fan, as appears on page 12 of the Robbins catalogue "B", which is plaintiff's Exhibit 8. This particle will be thrown outwardly in some direction or other, and I will assume that it will be thrown straight upward against the ceiling. It will then travel forwardly in some more or less direct course to the front of the incubator. The tissue paper ribbons I noted the other day in the Robbins machine, Exhibit 13, during the test made at the Los Angeles warehouse, indicated that the particle of air would not travel in a line which was strictly perpendicular from the front wall, but would deviate somewhat from that line. When it reaches the front wall it then takes a course which I do not believe all the seers in the world could define with any exactness. It would apparently come down in some course or other along the

(Testimony of Samuel E. Fouts)

front wall, if it reached the front wall at all, until it joined the return parts of air. Assuming that it did reach the front wall and turn backwardly, when it reached the egg trays there would be just one chance in six that it would ever touch a hot egg.

"That is quite different from the method of the Smith patent, in which such an air particle would be forced directly beneath the hot eggs and would, of necessity, be compelled to traverse the hot egg trays and to pass from those hot eggs upwardly into contact with the colder eggs. And that, as I undertook to point out in my statement as to the exact Smith method, is an essential feature of Smith's method. So there would be merely one-sixth of a chance that the air particle would ever contact with the hot eggs in the defendant's machine. And, if it did, it is my opinion that it would never pass from that hot egg into contact with a cold egg so as to deliver up any heat unit which it might have obtained from the hot egg. I feel certain that there would be no direct travel of this air particle from the hot egg to the cold, as in the Smith method. When the egg trays are tilted, as shown on page 13, line 89, of plaintiff's Exhibit No. 8, with the egg trays full of eggs, so as to form what Smith refers to on page 1 of his specification as a close and solid formation, the air particle will almost certainly be carried from the egg which it strikes over this almost solid wall of eggs and will not be carried through the

(Testimony of Samuel E. Fouts)

relatively small interstices between the eggs so as to reach eggs in any other tray."

The method of claim 2 of the Smith patent differs from the method of claim 1 merely in the matter of having what is referred to in the former claim as an adjacent chamber, or, in other words, a chamber adjacent the closed chamber in which the eggs are to be incubated and in causing the power-driven current of heated air to pass through this said adjacent chamber through openings into the egg chamber. I see nothing whatever in the defendant's structure which corresponds or answers to that limitation of claim 2. I mean by "limitation" the adjacent chamber in which the current of air originates and is then carried from that chamber into what we call the closed chamber. I have the Smith claim before me and will point out that there is no such thing as a closed chamber in Robbins as distinguished from some other chamber which is an adjacent chamber in which the current originates and passes over into the said closed chamber.

I have studied the file wrapper and contents of the Smith patent in suit, defendant's Exhibit B, including the file history of the case in the patent office.

Whereupon witness was asked to state the effect which the file history of the Smith patent has upon the interpretation which must necessarily be placed upon the claims thereof alleged to be infringed, and thereupon counsel for plaintiffs objected to said question and were sustained by the Master with exception to defendant.

(Testimony of Samuel E. Fouts)

CROSS EXAMINATION

of the witness

SAMUEL E. FOUTS

by Mr. Ely.

The model, defendant's Exhibit C, illustrates, or represents, the principle upon which the Robbins commercial incubators are built and the principle upon which they operate, but, as I said on my direct examination, there are discrepancies in the structure and certain differences in proportion of some of the parts. I do not know whether Robbins makes more than one type of machine like this model, as I have never examined any of the Robbins machines except No. 23, like the one in the warehouse which we examined the other day. I also saw the defendant's machine in operation and it seemed to be substantially like the one in the warehouse. Probably the egg trays in the model may be rather out of proportion.

Looking at a catalogue handed me, I cannot see the interior structure of certain models illustrated therein, but as far as the outside dimensions are concerned it appears to be the same as models 14 and 17, but I cannot be definite about it. So far as I know, this model is illustrative of all of Robbins machines, at least in principle and general structure. The tilt of the trays in the Smith patents appear to be about 25° or 30° from the horizontal, but in the machines it appears to be more than that, but whether so much as 45° I cannot say. Nevertheless, the trays are set a considerable angle to the vertical and in the machine slightly more than in

(Testimony of Samuel E. Fouts)

the patent and enough so that the egg is tilted back and forth. The trays in the Robbins structure are set approximately at an angle of 45°, although I have never attempted to measure it. I do not believe a matter of a few degrees one way or the other would make any diffence, so long as the eggs are tilted to get results. It might make some difference as to the course the air would take in passing through the rack, but otherwise probably no difference.

If a line is drawn extending 45° from the horizontal plane it would also be 45° from the vertical plane. The angle would be the same whether or not a current was moving vertically or horizontally with reference to the trays.

In operating a successful incubator the moisture requirements vary according to the condition of the eggs and their respective stages of incubation. It is probably desirable to remove some of the considerable moisture from the egg in the beginning and therefore the air at that time should not be so moist as in the later stages when there is considerable heat generated and the chick is developed so that it pretty well fills the shell and the egg at that later stage would require more moisture than in the beginning.

The body of moving air, either in the Robbins or Smith machines, will tend to dry out the egg rapidly and you wouldn't get chicks unless precautions are taken to prevent it. To retard such drying out we have in the same patent what is known as conservation of moisture, although I do not know that the movement of the air has anything to do with that. Assuming that the air

in both cases has the same humidity, a moving body of air will naturally dry out an object faster than a still body of air. In the Smith patent and incubator and in the Robbins incubators the air is kept sufficiently humid to prevent the excessive drying out of the eggs, and the movement and recirculation of the same body of air in the egg chambers contributes to that result, and preserves a uniformity of the conditions of the atmosphere. The admission of fresh air and the discharge of foul air is limited so that the moisture within the body of air is preserved. If you just opened the doors, the air would blow right out and the moisture would blow with it. That principle of the recirculation of the air and the confining of the air and the admission of limited quantities of fresh air are all in the Smith invention.

Supplementing my description of the invention of the Smith patent, the eggs are arranged in a closed chamber having the provision for the admission of limited amounts of fresh air and the escape of equivalent amounts of foul air, all of which of course is more or less conventional and the purpose of which, of course, is to conserve the moisture and prevent injury to the eggs by drying them out.

As a part of the Smith invention, the eggs are in various stages of incubation within the closed chamber and the air is forcibly moved in currents, which is a closed circuit except in so far as a portion of the air escapes through a vent over the top of the egg chamber and which, of course, would not follow the closed cycle. The main body of air moves in a closed cycle and fans are the specific means used, both by defendant and the

(Testimony of Samuel E. Fouts)

plaintiffs, although I suppose it could be by some other mechanical means. It must be something other than by changes of temperature, or what is known as convection currents. In both the Smith and the Robbins machines, as the closed cycle of air moves through the eggs it maintains a constant temperature throughout the chamber, which prevents local hot spots. In the Smith invention the cycle of air first moves through the body of hot eggs and then next through the body of cold eggs and in so doing picks up the heat from the hot eggs and carries that heat over and warms the cool eggs, which is the same principle as when I place my hand to be warmed over a radiator.

The Smith patent discloses that one side of the incubator is substantially a duplicate of the other side. Therefore, so far as the process or method is concerned, we can limit our discussion to one side of the machine.

I am shown a drawing made by counsel showing the current moving in a certain direction and the eggs marked respectively one day old and 18 days old, and which said drawing or diagram, illustrates the path of movement of current in the Smith invention wherein a compelled movement is used and represents the travel of the air through the hot trays and up to the cooler trays. That current of air as it moves from the oldest eggs to the youngest eggs carries the heat from the eggs that are 18 days old to those that are 1 day old, unless the heat is extracted by some intermediate eggs in the meanwhile.

If 9 day old eggs are placed between the 1 day old eggs and the 18 day old eggs some of the heat will

(Testimony of Samuel E. Fouts)

then be extracted from the 18 day old eggs and imparted to some of the eggs above, either the 9 day or the 1 day old. If the 9 day old eggs are cooler than the air current they will of course take up some of its heat. Although a 9 day old egg is cooler than an 18 day old egg, it may not be cooler than the air going by it.

If the air picks up any heat from the 9 day old eggs it will move it to the 1 day old eggs, and whether or not it picks up any heat will depend upon the relative temperatures and the air current. In other words, the heat from the 18 day old eggs in the Smith structure is picked up by the air and distributed to the cooler eggs above.

The said diagram, which illustrates the Smith invention, is marked "A".

With the current reversed as to direction, and also a reversal in arrangement of the eggs so that the 18 day old eggs are at the top and the 1 day old eggs at the bottom and the 9 day old eggs between the two, I would think that such an arrangement would still be within the Smith invention. A diagram illustrating this arrangement is marked "B".

Taking the same upward moving current, but keeping the eggs reversed so that the 18 day old eggs are on the top, the 9 day old eggs in the middle and the 1 day old eggs below, the current will take up a part of the heat from the 18 day old eggs and transfer it to the 1 day old eggs, although some of the heat may escape through the vent in the top and never get around. But as long as you have a closed cycle or a closed circuit of air current any eggs which are put in that current

(Testimony of Samuel E. Fouts)

are going either to take up heat from the current or give off heat to the current, depending upon whether or not they are hotter or colder than the air in there. And there would be some of the heat taken off from the 18-day-old eggs and be carried around and delivered to the 1-day-old eggs. (A diagram illustrating this said arrangement is marked "C".)

With the same upward moving current and placing the 9 day old eggs on top, the 1 day old eggs in the center and the 18 day old eggs at the bottom heat would be carried by the continuous cycle of current from the oldest eggs to eggs in an earlier stage of incubation. The same thing can be done almost ad infinitum, or, in other words, the egg trays can be placed in any particular arrangement and so long as a closed circuit of air is created the heat will be carried from the old eggs to the fresher eggs. I think that is right. Taking the sketch, which has been marked "E", and putting the 9 day old eggs at the top, the 3 day old eggs in the next tray, the 12 day old eggs below that and the 18 day old eggs at the bottom, the current still carries heat from the older eggs to the fresher eggs. In a practical sense it makes no difference as to the purpose of the moving of the cycle of air in what arrangement the eggs are placed relative to their age.

"Q. That is, as respects the claims of the patent, do you mean?

"A Yes."

I do not want to make any statement which might be understood as an attempt to interpret the patent, but this arrangement you tried to bring out here probably makes

(Testimony of Samuel E. Fouts)

no difference in the practical or commercial operation of the machine. However, I am not to be understood as saying it makes no difference with respect to the Smith invention.

In any one of these arrangements the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage. I thought the word "arrangement" referred to both the Robbins and Smith machines but I now understand that the diagrams are applied to the Smith patent. It does make a difference in the Smith "method" if you mean what is granted to Smith by the patent, but if you refer to the operation of the Smith structure it makes no difference as a final result, that is, the air will come to a definite temperature and that will be such as to take heat units from the hot eggs and distribute them to some of the cold eggs. These arrangements all come within the Smith method. I do not believe it makes any great difference whether or not the closed cycle is moving in a vertical plane or in a horizontal plane as to its operation and it would practically accomplish the same thing if it were tilted in a diagonal position.

I am not sure whether the operation is the same, in considering diagram "E" and diagram "D", if we were to remove the 18 day old eggs and place them in the hatching trays and substitute that with 1 day old eggs. I would say so as to this sketch "D" because then you have a 1 day old tray with another 1 day old tray right above, but in principle it is the same.

The arrangement in diagram "F" wherein the 18 day old eggs have been replaced by 1 day old eggs, the 1

(Testimony of Samuel E. Fouts)

day old eggs become 2 day old eggs and the 9 day old eggs become 10 day old eggs; with a tray of 16 day old eggs above, indicates a situation similar to the one in "C", because we have the hot eggs at the top and the cool ones at the bottom, and in the cycle the heat units would be carried around from the top and delivered down at the bottom. In so far as the operation of the closed cycle is concerned, when 18 day old eggs are removed and replaced with 1 day old eggs you will get the same effect as to the air in the long run. But, if you have the 18 day old eggs at the bottom of the tier of racks with the current running upwardly so that it contacts with those hot eggs first, and the 18 day old eggs are removed and replaced with 1 day old eggs, then the current of air will first strike the 1 day old eggs and will not receive heat from them to carry upwardly. So there you have that difference. "Q As the air is moving in a closed cycle, it does not make any difference how the eggs are arranged so long as there are different ages of incubation? A. Only would that be true as an ultimate result. You would finally get air throughout the whole cycle into a temperature where it is uniform and it will pick up heat from one egg and carry it to another egg somewhere in the cycle."

I remember examining the Buckeye incubator at the Beacham Hatchery. It had trays similar to those shown in the patent and I do not much suppose it is necessary, in the operation of the Buckeye machine, to move the egg trays down every time fresh eggs are added to it in order to secure a successful operation of the machine.

(Testimony of Samuel E. Fouts)

"Q Then, is it correct to say that the Smith process is a process of incubating a plurality of eggs which are arranged in tiers and in an enclosed chamber? That is correct, isn't it?

A Arranged in tiers?

Q Yes; in an enclosed chamber.

A Well, maybe you are limiting it too much. If you mean by tiers this dual construction—

Q Oh, no; I don't mean that. I mean—well, you put your meaning in there. You may change that language to suit you, if you like.

A I presume you mean by tiers an arrangement such as is indicated here in Figure 3, where you have these separate stacks?

Q I mean egg trays one above another.

A Yes, sir."

The Smith process also includes a closed chamber with a provision for the admission of limited amounts of fresh air and the escape of enough foul air to preserve a certain degree of purity of the air. So I guess there would be equivalent amounts. It might be better to say with admission of limited amounts of fresh air and the escape of limited amounts of foul air so that the moisture is conserved and the eggs are not injuriously dried out. And those eggs are in various stages of incubation. The air within the chamber is forcibly moved in currents in a closed cycle as distinguished from convection currents, although a fan is not necessarily used, but by some means other than a change of temperature, or, in other words, by any mechanical means whereby convection currents are not used. The cycle, or current of

(Testimony of Samuel E. Fouts)

air, moves through the body or mass of eggs from either the upper or the lower, or from the lower to the upper, end of the tier and in so moving a substantially uniform temperature is maintained throughout the chamber and the eggs, which would not be possible without such a circulation. The air picks up the heat units given off by the eggs in the more advanced stages of incubation and imparts the said heat units to eggs in the less advanced stages of incubation. As the air moves in a continuous cycle through the eggs, the direction of the air is of no moment to obtain the broad result that you have stated here.

The order in which the eggs are placed in the different stages of incubation in that current of air for the transfer of heat is immaterial in the practical operation of the Smith machine, although I do not see that it makes much difference after the thing gets going once.

It is necessary, to carry out the Smith invention, or in the operation of the Smith method as illustrated by the patent, to move the eggs in the current.

"Q Let's pause a minute on that. I thought you said if I took the 18-day-old eggs out of the incubator and replaced them with the one-day-old eggs that the heat units would still be transferred from eggs of the further stages of incubation to those in the earlier stages of incubation? That is correct, is it not?

A Yes; I think so.

Q Then, as a matter of fact it is not necessary to move the eggs but just to place them so that you have eggs in varying stages of incubation in that column of air or in that current of air? That is correct, isn't it?

(Testimony of Samuel E. Fouts)

A I think that is correct; yes."

Whereupon counsel for plaintiffs offered in evidence, as plaintiffs' Exhibit No. 18, the sketches above referred to and which were accordingly received in evidence over the objection of counsel for defendant, with the limitation that such sketches are not evidence but only illustrative of the witness' testimony.

Whereupon witness resumed: I would like to add that the answers I have given in regard to the sketches were given with the assumption that there are some means provided which will require the air to travel as indicated. It makes no difference whether there is anything to guide the air travelling in the path indicated, if the air does travel in that path. If the air will travel without a guiding means, and so long as it does go in that path, it makes no difference whether or not there is any apparatus to guide it, but air, you know, is not very tractable and will not keep in a definite course unless you have some means to hold it to that course, or, in other words, some means on there to compel that air to move in a definite path and this is supposed to be a definite path you have outlined here.

As to whether or not you can propel air fast enough by impulsion of the air itself to make it move in a definite current I would answer yes, and in saying yes, here is what I mean. Assume we have a very rapidly rotating fan discharging air in a certain direction through this room. I suppose a part of that air would be directed in some definite direction, but around the outer edges would be eddy currents set off and so on. So while parts of the air may start in a certain course along with the rest

(Testimony of Samuel E. Fouts)

of it, it will lose itself as it gets away from the fan, and, in order to cause all of the body of air which starts from the impelling cause, whatever it may be, to keep in a definite circuit, I think one will have to have some sort of confining walls to the circuit, otherwise it would diffuse itself.

The same result for the whole body of air could not be obtained by creating sufficient velocity and volume so as to create a definite current, but there might be a portion, say the core of the body, that shoots off from the propelling source, which might go in a definite current, but the outer parts would slough off, so to speak, and become diffused. I think it is probably true that it might be possible to drive a body of air with sufficient force and in sufficient volume so that the main body of that air would travel in a definite path.

I am asked whether there is a patent in the prior art disclosing a method whereby forcing means is provided to produce a current of air, other than changes of temperature, in a cycle, and, with eggs in various stages of incubation and arranged in tiers, so that the heat from one egg will be carried from that egg to the cooler eggs. I cannot point to any one patent which shows all of that, as I said in my direct examination; Zimmer comes the closest to it, but without that air forcing means. That would have to be added to his disclosure to produce the Smith invention that is being talked about. The Fullington patent, Exhibit A-34, is an incubator patent in the prior art which discloses a means for forcing air throughout the incubator in a closed cycle. This patent does not show eggs in various stages of incubation. Fan 12 com-

prises the forcing means in the Fullington patent, which is normally quiescent and which said fan is started or stopped by the contact of the two points shown at the left of Figure 4.

(Whereupon an adjournment was taken until 12 P. M. of the same day.)

CROSS-EXAMINATION

of the witness,

SAMUEL E. FOUTS,

resumed by Mr. Ely:

I have had an opportunity to study the Fullington patent and I know how it operates. Fig. 1 represents a plan view of the incubator with the top and the egg trays removed. The heating element 23 is a lamp and apparently placed inside of the incubating chamber. It is either within it or down below it, but I think that it is inside, and I would say that is so from an inspection of Fig. 4 as well, but the specification throws no particular light on it and I must go by the drawings. I am disposed to think that that lamp is in the incubating chamber. Over that lamp is a sort of wafer or damper 25 floating on the end of the pivoted arm 26. The contact 37, at the left of Fig. 4 is controlled by the raising and lowering of that wafer or damper. The other contact is stationary, as I understand it, except as it may be adjusted in position by that screw 32 and thus have its contact end 40 brought closer to the contact end of the other lever, or separated farther from it, as one may desire.

(Testimony of Samuel E. Fouts)

The patent says that the increase of heat generated by the element 23 might very easily prove detrimental to the contents of the incubator and yet before such heat can do any actual harm the damper 25 would necessarily be buoyed up. The patent states that the rising currents of hot air will tend to buoy that damper and the raising of the wafer makes contact between the contact arms 37 and 38 which starts up the fan with the air therefrom going in at the pipe 18. The fresh air from the fan goes through 18 and is delivered inside of the incubating chamber. The air pan is referred to as 15, but I cannot determine whether the pipe 18, which carries the fresh air, passes down through a hole in that pan or whether it has a sort of a gooseneck on it which terminates above the floor of that pan. The patent is not clear on that point, but anyway the fresh air is delivered through the end of that pipe and into the incubating chamber and the foul air goes out of the pipe 17 and is discharged from the opening 17a, as shown in Fig. 5, after which fresh air is drawn into the fan through the opening 20.

In the operation of this machine, if the lamp flares up or gets hot the damper raises, the circuit is closed, the fan blows the cold air into the incubator and the foul air out instead of sucking it out. The action of the fan is controlled by the action of the lamp. When the fan starts up and blows the air into that chamber there is no effect on the lamp through any mechanical connections. As to whether the air blown into that chamber might make the lamp burn faster or smoke depends upon whether the blast from that pipe 18 would be permitted to reach the lamp with such a velocity as to give that

(Testimony of Samuel E. Fouts)

result. If the blast from the pipe 18 gets into the incubator it would get over to the lamp, but I cannot say that there would be such a strong current of air coming from that pipe 18 in the vicinity of the lamp as to cause it to flare up or smoke. It might make it burn faster which is a matter of the amount of oxygen that is furnished. The draft, of course, affects the burning of the lamp only by reason of the increased amount of oxygen which it may provide. If the air entering the incubator through pipe 18 provides more oxygen for the lamp the latter might flare up, or burn brighter or more strongly, but I don't suppose that Fullington contemplated letting the atmosphere in the incubator vary considerably and I would not expect any great variations in the intensity of the lamp burning because of an oversupply or deficiency of oxygen. If the air entering through pipe 18 made a commotion or disturbance in the air in the incubator it might affect the flame of the lamp which might increase its heat until it became hot enough in the incubator to float up the damper 25 and then, if the lamp kept burning, there would be a continuous operation of the motor and the fan and you would have a circulation very similar to what we have in these big incubators that are involved here.

Theoretically, when the damper lifts and sufficient hot air escapes to reduce the temperature within the incubating chamber to a point where the float or damper will no longer be bouyed up the same will settle down automatically and the electric contacts will separate and the motor stop. I have never used such a device, although my testimony given here has been as a practical incubator

(Testimony of Samuel E. Fouts)

operator and I do not know whether an incubator of the Fullington type was ever in existence. Some of the air blown into the incubator is blown out through the pipe 17, which I would suppose takes the moisture with it.

Heating of the eggs increases the temperature within the incubating chamber, which causes the float 25 to be buoyed up which might not otherwise occur. I would like to point out that Mr. Fullington says on page 2, beginning with line 11, in regard to the heating element being shown as a lamp: "Although it is obvious that any other means, such as gas or electricity, could be employed with equal facility for that purpose." If electricity is used the condition of the atmosphere within the egg chamber would of course not affect the heating and I do not think it would affect the damper. I do not understand the patent as regards a burning lamp, and whether or not you have the lamp 23 or electric heating units in place of the lamp there will be a current of air set up through that chamber 22 below the float 25 which latter will be buoyed up irrespective of what may be the specific source of that heat. In other words, the damper is raised or lowered due to the lamp, or whatever heating unit may be used in its stead. Such a means for controlling the heat is not nearly so sensitive as a good many other thermostatic devices, but I would not say whether or not it is sufficiently sensitive or accurate for the purpose for which Fullington proposes to use it. It looks rather trappy and crude to me. The main thing that struck me as rather unmechanical is the dependence upon that string 41 going through an eye down there and being dragged through frictionally looks a little unmechanical, but Ful-

lington could readily overcome that in an obvious way and it might be all right.

It seems that Fullington contemplated the fan to remain normally quiescent. It depends, of course, upon the volume of heat that is being used there. If he permits his lamp to burn tolerably high the float would be held open and keep his fan going constantly, and might blow the moisture out of the incubator if Fullington did not do as everybody else does, and provide some means of maintaining moisture in there. No such device is shown in the drawing but this invention is merely what Fullington calls an incubator attachment and he has not even shown the egg trays and likewise no moistening devices are shown. The patent shows a somewhat crude form of thermostat or a substitute therefor, or heat controlling device, as it is called.

The Fullington patent is the only incubator patent showing an incubator with a forced draft. One of the patents showing eggs in staged incubation is the German patent to Stulik, wherein fresh eggs are placed at the bottom of the chimney or chamber and the trays of eggs are moved upwardly as incubation progresses and when the eggs are about ready to hatch they are at the top of the stack. The air passes up through that stack of trays solely by convection currents or chimney effects, which perhaps does not adequately prevent the formation or generation of hot spots, although a circulation of air by whatever means would tend to prevent the formation of hot spots, but it might not be an adequate circulation for that purpose. The air is not forcibly moved by some mechanical means, or any means other than by tempera-

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ture. The air passes out at the top through opening d which is to say that any units of heat picked up by the eggs in the most advanced stages of incubation pass out of the incubator and there is not the cycle we have talked about in the Smith method.

I may have referred to the Winkler patent No. 286,756, as a rather peculiar type of incubator because that is the way I was impressed by it. The Winkler patent shows no forced draft. The several runs of the belt are separated from one another by wide water jackets G, which extend from side to side of the incubator and from a side wall to the pulley around which the belt goes. Those water jackets are heated by water which goes either from top to bottom or bottom to top, I am not sure which. The water in the top compartment G is the hottest, as I recollect the operation, which, if true, means that the water in the lower compartment G would be cooler. The specification says on page 2, line 23: "As hot water goes to the top, it will be found that the uppermost water jacket will be the hottest, and so on down, and, as greater heat is required at the beginning of the process, this the suitable condition." The sole means by which air can get from the lowermost part to the top part in that incubator is around each of those pans and up through the pulleys in a zigzag path, which represents solely a convection current, and there is no movement of air in a cycle through that machine. Of course, in saying that I mean throughout the machine as a whole. There may be some air in the spaces between these large closed pans G eddying about in little circles. I do not know just what would happen, but there is no general circulation

and recirculation of the air through the machine. I do not know whether there even was an incubator constructed like this Winkler patent.

With regards to the Perkins patent No. 798,697, as the eggs go through that incubator on a chain they move on successive days in separate compartments and the access and transfer of the atmosphere between the two compartments are effectually closed off by those flat aprons J, but just how effective that is I do not know, although it is within the teaching of the patent. I understand that each and every separate one of those chambers has a separate thermostat. I think that is correct. The patent says that the air currents may be moved around by convection and discloses no means to force such circulation. I have never known of an incubator like this Perkins patent. It is peculiar in some regards. It may not be a practical device. I would not want to express an opinion, but I will say it is unusual. It is built up on the order of a sectional book case with a long chain affair to carry the egg trays along.

The Zimmer patent, No. 1,075,747, Exhibit A-29, shows eggs in staged incubation. It is my individual opinion that this Zimmer patent is the closest or best reference with regard to the method and the two claims of the Smith patent in suit herein, although others might consider some other patent to be closer. My opinion is based on the fact that the eggs in staged incubation are disposed in the column or stack in exactly the same way as in the Smith patented disclosure with respect to hot eggs at the bottom and the gradually cooler eggs at the top of the stack. Smith puts his eggs in in bunches of

three trays so that the change from one stage to the next will be from one bunch of three to the next bunch of three, while Zimmer changes every day and the change is from tray to tray.

According to the Zimmer patent a number of eggs are placed in a tray in the bottom of the incubator over which said eggs is laid a feather mat. The following day another tray of eggs and feather mat thereover is placed in the incubator and then the third day the same thing is done. That proceeds for ten days and then you let it stand until the twelfth day is reached and the upper layer of eggs is twelve days old. The trays of eggs are placed in the closed container and heat applied through the water jacket which surrounds the said egg chamber. Fig. 2 shows a brooder attachment 34 which is called a nursery and referred to on page 3, lines 32 and 33 of the patent. Looking at Figs. 3 and 4, and particularly at Fig. 4, it will be noted that the nursery is connected with the bottom of the incubating chamber, with an opening controlled by a slide 36 if it is desired to use the slide. The nursery chamber has doors and it is intended to keep the hatched chicks there. In the operation of this incubator enough air would be admitted to that nursery through the door 37 or otherwise to sustain the chicks because nobody would be stupid enough to shut them up and suffocate them. That air can pass through the opening 35 into the incubating chamber. That is one way he can get air into it and I cannot point out from the drawing any other way. Of course no one is going to permit his eggs or chicks to suffer for want of air and I do not think that would happen in this Zimmer device.

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When we get to the middle point, at the end of twelve or fourteen days, whichever it is, the whole stack is reversed and the hot eggs are at the bottom and that is where they will be taken off, Fig. 1 shows the last or bottom row of eggs, which are the ones ready to hatch, and, in order to provide space for the chicks, the trays above have been lifted up on those *leggs* 33. When the chicks are hatched they are supposed to pass out into that nursery chamber, and, of couse, a brood of chicks come off every day, consequently that door must be kept open for the chicks to go out into the hatchery or the nursery, and I would say that would supply all of the air that Zimmer would need for his incubation. The first part of incubation does not require so much of a change of air anyway. The eggs are cold to start with and heat must be conserved to raise the temperature. At this time the chicks have not developed to the stage where they need a great deal of oxygen. During the first half of the Zimmer incubation process you do not need much air and when you get to the latter half plenty of it is provided. Eggs, of course, require air during all the periods of incubation, but the amount varies and when carbon dioxide is present it must be removed from the immediate vicinity of the eggs. That is a result of the embryological process and has not progressed so far until after some days subsequent to the first setting. Without a change of air eggs might smother in their own gases by the time twenty-one days was reached, but whether or not they would in the first ten days is something I cannot answer. As to whether or not in the Zimmer device air can get up between one thousand

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eggs sufficiently to keep life going in them is a practical question that someone else had better be asked about, and which I do not pretend to know. In the first place sufficient air would have to be admitted to supply the necessary oxygen and enough air must be supplied to get it up there and whether or not Zimmer accomplishes that I do not know. I cannot say whether or not the Zimmer device is practical.

Zimmer shows the trays resting on top of the eggs successively until the hatching day is reached when they are all lifted up, as shown in Fig. 1, and supported on those legs so that the eggs which are actually hatching out may be relieved of all pressure. I am aware of the passage in the patent which says: "the heat of the hatching eggs causes them to expand and apply pressure to the shells, thus tending to disintegrate the shells and this disintegrating process is greatly promoted and facilitated by the weight of the superincumbent layer of eggs, the weight tending to flatten the lower eggs, change the shape of their shells and, hence, aiding in their decomposition and rendering them somewhat more brittle?" If Zimmer permits the weight of the superimposed eggs to rest on the eggs which are hatching so as to flatten them out and assist the chicks in coming out, it would look as if such might cause a great deal of trouble to the chicks in getting out. That is true if the superincumbent layer of eggs squeezed and pressed the eggs until flat. But I do not know how far that is carried out and it sounds rather strange. There is no forced draft shown in the Zimmer patent and, of course, no movement of air in a cycle by reason of a forced draft, and possibly none

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at all, although it is difficult to say just what eddy currents may be present in the Zimmer incubator. There might be a closed cycle for a few moments in one place, but there is no general circulation and recirculation through a definite path.

In some ways the construction of the Zimmer machine is like a fireless cooker and in fact it is called a semi-fireless incubator. With a fireless cooker all of the heat must be applied to the material which is to be cooked, and then the fire may be turned off and the material stews in its own heat but does not generate heat. Zimmer turns off his fire, or he may do that, and the chicks will continue to develope and as they do they spontaneously generate heat. This might be worse or it might be better than the process of a fireless cooker. As to whether or not the eggs would be cooked depends, I should think, on the amount of air you permit to reach the incubator. If you shut it up tightly according to the theories I have heard advanced here in the Smith patent, the eggs probably would be cooked, at least when they reached the hatching period. I do not know whether anyone ever operated an incubator according to the Zimmer patent and I do not know what percentage of successful hatches might be expected from a Zimmer machine.

These are all the patents I recall on staged incubation and all of the art that I have before me. I don't know of any prior art patents other than the Fullington patent which discloses an actual forced draft. The other patents, or most of them at least, have the heating arrangement so positioned and connected with the incubating chamber as to cause the currents of air to ciculate, but

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such circulation is due solely to the variations of temperature and not to a forced draft. All of the patents, except Fullington, disclose incubators operating by the still air principle in the sense of their operation and with respect to the Morgan patent No. 272,744, Exhibit A-5. Fullington operates by the still air principle except when the lamp raises the wafer, although Fullington can so set that arrangement as to enable the motor and fan to run continuously if he wants to burn his lamp in that way. He does not so describe it and it was not his contemplated way of operating it, but it can be so operated.

It is my understanding that in still air machines it was desired to keep the eggs from a draft, such as, for instance, is described in the Boyd patent or the Bassini patent. Some of the patentees practically say that. I saw it in my study of these patents and have heard it referred to in the courtroom here and that has been the understanding I have had in the incubator art ever since I have become acquainted with it. In other words, there is a prejudice against setting the eggs in a draft. The defendant's machine herein is not a still air machine but a forced draft type of some considerable velocity, with restricted openings for the admission of fresh air and like openings for the escape of foul air. As I did not look at the top of the incubator I do not know how many such openings there were. The eggs in the hatching compartment of the said incubator are arranged in tiers, which is also true as to the incubating compartment. A certain amount of moisture exists in the air circulated around in there and whatever moisture may be in the air which passes out, of course, is lost, but the amount that remains

inside is conserved and this amount is sufficient to meet the requirements of the eggs. That is to say, the eggs in the Robbins incubator do not dry out injuriously. The eggs are placed in the Robbins incubator in various stages of incubation, with eggs in the hatching trays in the last stages of incubation and in the tilting drum in various stages of incubation.

Robbins proceeds to set his eggs in the tilting racks. He will put in a tray of fresh eggs in one or the other of the tiers in the empty tilting section. We will say he puts it in above the pivot, or above the center shaft. He next places a tray in some tier or other and just as far below the shaft as the first one was above the shaft in order to preserve a balance of the rack, and so he proceeds throughout with the idea of preserving that balance. If he places the tray above he also places another below in such a position as to maintain the said balance and that is the idea he follows out. I do not know where he places the first tray, whether in the first pocket above the shaft, or in the third or in the second, but that is the principle he follows: Another principle carefully observed is that in no instance should two trays be placed together. That is, if a tray is placed on the first slide or pocket above the shaft, then on the same day a tray must not be placed in the next compartment or slide or pocket for if that were done it would bring two trays together and in the last stages of incubation there would be so much heat generated in a relatively small space as to interfere with the correct operation of the machine. So not only does Robbins preserve his balance, but he has studied out a system by which one will not only keep his balance but will also

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preserve the maximum distance between the trays with which the incubator is charged at any one setting.

"MR. FARRAR: Mr. Ely, may I suggest that that method is defined in the instruction book, and we have no objection to your using it?

Mr. ELY: I have never seen Mr. Robbins' instruction book and I don't care whether it is in there or not.

MR. FARRAR: I was going to admit it.

MR. ELY: WELL, Let's get it in the record."

The purchaser of a Robbins incubator can, of course, place eggs therein so as not to observe this mentioned equilibrium if he wants to go to that extreme. He can "bootleg" on the setting if he desires to.

Starting out with the incubator empty I am asked if the first egg tray can be placed above the shaft and the next one below in the manner indicated by Mr. Ely. As far as preserving the balance is concerned they can be placed in that manner, but that would not be in accordance with the intent of the Robbins Company, or, in other words, not in conformity with the way the company wants the machine to be operated and, as I understand it, would not be the way the machine should be operated because you would have the two trays in adjacent positions and that would create a center of heat which would be detrimental. I have not tried to figure out or memorize the exact position the egg trays should occupy successively, but I would suggest that one be placed there next to the top and if another one is placed down there such an arrangement would preserve the equilibrium, but I do not know whether that would be the way Mr. Robbins would do it because sometimes he goes over to the

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other racks, but so far as balance alone is concerned the two trays are now in balanced relation. The next setting occurs about three days later. The manner of placing the first trays marked "A" may be followed in the next setting, as that will preserve the balance, but perhaps in the next move made on the next setting day trouble may be encountered, and I think that one would eventually have two of the trays put in together. By following the arrangement indicated you have deviated from what the Robbins Company intends and have deviated and departed from the instructions. If you had stopped before you put those last two trays in everything would have been all right, because you have preserved a balance and would not have them bunched too close together. The next move indicated is unwise because the two "As" are supposed to be placed at the same time and the one at the top is away above the shaft and the one below is close to the shaft. One should never move the trays around after they are once put into the incubator. As to whether or not the arrangement demonstrated by Mr. Ely is good enough to illustrate the method of the operation of the Robbins incubator is for Mr. Ely to say. At least the incubator has not been charged in the way Mr. Robbins would have it done. Of course, there are trays of eggs in various stages of incubation in the rack and there are older eggs in some trays and fresher eggs in the next adjacent tray, but it was not indicated which were the oldest eggs. It is pointed out to me that "A" is the oldest, "B" is the next oldest, "C" is the next oldest and "D" is the freshest. When the fan is started up with

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the trays tilted, which is the way the eggs are incubated, I do not believe anybody knows, or can say, definitely what exact direction the air is moving through the tilting drum. I know what has been said and perhaps the general direction of travel of the air is about as Mr. Taggart has said; but I am convinced that when the egg trays are filled with eggs in a solid wall formation, as I believe Mr. Smith has expressed it, in his patent, the direction which that air passes through the formation will be considerably modified and exactly what course it will take I would not presume to say. The first tests I saw made with an anemometer were applied to an empty incubator and the next were made with an incubator with empty trays, in which latter event there is not a very great deal of obstruction to the rearward movement, and the air seems to pass to the back of the fan in a more or less straight line. The normal operation occurs when eggs are placed in the incubator and no one cares anything about what direction currents are taking in an empty incubator. With eggs in the Robbins incubator I have yet to hear anyone tell what direction the current will take and I do not know.

It not only would retard the current somewhat, but also would change the general direction of the current. There is practically a solid wall of eggs and the upper ends of the eggs are dome-shaped. There are planes through there between the trays where there would be the least resistance to the flow of the air and the air will take the course of least resistance. So I believe that when the air comes back and strikes the front edges of those trays as they are positioned there it will, in that

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case, strike the bottom of the egg, that is, the rounded lower end of the egg, and be deflected almost as completely as if there were a solid board bottom in that tray, which means that if the trays are tilted at 45° the air, if it did not come straight back from the front door, would, when it reached the tilting rack, separate into many flat streams or sheets proceeding between the trays and over the tops of some and below the bottoms of those in the next adjacent tray above. That is my belief, although I have not tested it and I haven't seen it tested and haven't had anybody say a word about what would happen in the Robins incubator with the trays full of eggs. That is a difference between the Smith operation and the Robbins operation, but not the entire difference between those two methods by any means. The difference we have been discussing is that the air will flow back between the adjacent layers of eggs, or at least almost the entire quantity of air will, and will keep in those flat sheets or streams and scarcely any of it will pass between the eggs in any of the different trays. There may be a slight eddy up between the eggs but, even if that would occur and would pass through from the bottom up as it is tilted there, in my opinion that little part of the air which is thus eddied between the eggs would be caught in the next stream above it, which would be moving relatively fast toward the back, and would be carried right out of the back of the rack and would never reach the eggs above it in that cycle. If we could conceive of a unit of heat as something concrete and keep it in our mind's eye we might find that unit of heat circulating around and around and ultimately it might contact with a cold egg

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and warm it up. That might or might not happen and if it did it might or might not be timely.

As I have just said I do not think there is any substantial air that goes through the egg trays. If some of the eggs in the rack are hotter than the air which is in circulation some of the heat from those hot eggs will be extracted by the air, but that current of air does not heat the eggs in the earlier stages of incubation. Perhaps some of the body of air moving through the tilting egg trays impinges upon the eggs in the earlier stages of incubation. The body of air through the tilting drum is moving in a series of currents in superimposed relation. That is my belief. The body of air which has been forced to the front turns and goes through the tilting drum in the same general direction and, as it is passing through the rack, it is split up into various superimposed planes, and the air that contacts eggs in the farther advanced stages of incubation picks up the heat units therefrom and warms eggs in the fresher or less advanced stages of incubation if it comes in contact with them, but that is not the same air that was in contact with the hot eggs.

The air in some parts of the Robbins machine has a direct current and the forwardly moving air probably moves in a direct current, although I hardly know what you mean by direct current. I am a little bit in the dark about that. It certainly is not an alternating current. I think that in the Robbins incubators there are currents that are positive and continuous. The currents travelling toward the front door or away from the fan are positive and they are continuous so long as the fan is moving.

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With the proper instruments I could determine those currents, or at least determine with an anemometer the speed and general course, and probably a more direct test, as to the exact direction of the air at any point, might be consumated by some sort of a floating object. The velocity of the current can be determined. At some points in the machine the current is of a rather high velocity and might be termed, at these points, quite a strong current of air. The general movement of the air is outward from the fan axis along the back wall until it strikes the ceiling and the floor and the side walls and then it is more proper to say forwardly than outwardly. From the fan the current is along the ceiling and floor and the side walls and then the more rapidly moving currents of air strike the front wall and turn back through the egg trays. I have made no tests and am more or less theorizing and telling what I believe, but I think that along the side walls and the ceiling and the floor the air is travelling with the greatest velocity of any other place in the machine. As progress is made towards the center of the incubator from either the top, bottom or side portions, the velocity greatly diminishes until soon it will just peter out and then the air will begin going back the other way. The more rapidly moving parts of the air probably strike the front and then turn backwardly, but other parts of the air which are not propelled with so much initial velocity will probably be lost before they get there and will be caught up or leak out and return without ever reaching the front door. As a general statement I should think that the air moves in different paths or lines. If an isolated portion of the air can be conceived and followed

around in one circuit or cycle it might be found to go through one path and then be caught up, although in the next excursion it might be through an entirely different path. But in each case it would be generally from the fan forward and then back again.

Taking the entire body of air within the incubating machine it is definite, I should say, in its forward movement but in its rearward movement I do not know where it goes or what it does. It returns to the fan but through what specific paths I do not know. It returns to the fan at the end and, from what I understand and from what I have seen and believe, the forwardly moving parts of air are relatively thin sheets so that there is a much greater part of the transfer section of the air body that is moving backwardly than there is moving forwardly. In the interior part where the general movement is backward there are so many forces acting there with two fans beating from behind that I do not know what will happen. The air gets back and dodges around the obstructions in there but the general trend is backwards.

The air is maintained at substantially the same temperature throughout but whether or not the air currents maintain it so I do not know. Heating means, of course, are necessary to maintain it at that temperature. I think the air is substantially at the same temperature throughout the whole of the Robbins incubator and I think the circulation of air maintains it and, of course, as the air escapes more is added from the heating units so as to maintain substantially the same temperature, and more heat units from the eggs in the more advanced stages of incubation are added. Heat units are imparted to some

of the eggs in the lesser stages of incubation at some time or other. I have said that the most rapidly travelling part of the air currents strike the front wall, turn and go back through the incubator. The other parts of the forwardly travelling air would probably not be impelled with a sufficient velocity to ever reach the front wall but would turn back before they got there. It is the general tendency of the air to go forward on the outside and back on the inside. I cannot answer the question as to whether or not in the Robbins incubator any of the air moves from the front of the hatching portion to the side of the incubator into the portion occupied by the tilting trays.

I observed the tests at the warehouse the other day when Mr. Taggart set a plurality of anemometers along the rails in an empty incubator and also in an incubator with empty trays in place. The anemometers indicated that there was some air travelling from the end over where the hatching trays are located over into the part where the tilting trays are placed and I presume eventually the air goes back to the fan. I am not sure whether the model we have been discussing here is accurate in respect to the showing of the hatching trays. This photograph, plaintiffs' Exhibit 9-D, shows each of the slide ways with a hatching tray in it. In this model the hatching trays which comprise the two parts superimposed when put together fill the space between the slide ways and cannot be moved up and down as apparently they could be in the structure shown in the photograph Exhibit 9-D. I do not know just what particular machine that was taken from, although I am informed that it is of plaintiffs' Exhibit 13 and that it shows correctly the

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openings that are present between the trays at the sides. I do not know that of my own knowledge. I do not recall just where Mr. Taggart placed anemometers, whether in the trays or on the rails or otherwise.

I can only speculate about what effect eggs placed upon hatching trays have upon the direction of the current through the trays. It depends somewhat upon what particular point you are considering. If we consider the point immediately below the top tray, which we will assume is full of eggs, the air will sweep over and under them I think and hit the front door and then turn after it reaches the front of the machine. With respect to the hatching trays I do not know just what the presence or the absence of the eggs will have to do with the direction the air takes.

The model of the Robbins machine apparently shows continuous cleats at the side instead of blocks at the left-hand sides to separate the hatching trays. That was not called to my attention down at the warehouse the other day. It was my thought, during the observations the other day when Mr. Taggart was making his test and it is what the testimony here discloses, that the air current moves over the fans forward and follows the side walls and the ceiling.

The drawing, plaintiffs' Exhibit No. 17, indicates only generally the direction of the air currents. I think probably those arrows at the side, which apparently indicate a current reaching as far as the front door, are about right, although if this drawing is intended to indicate that there is no air at all between the arrows and the side lines, I wouldn't agree with it. In my opinion there is a

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crowding of air along the side walls and there is more air flowing per square inch adjacent the side walls than there would in the distance indicated here, or, in other words, that would be so in the absence of any obstructions in the machine. I do not know just what effect that would have. I should think that a correct showing of the body of air would differ from this drawing somewhat in that as one comes forward along through here there would be more and more air turning out from this forward part and joining the rearward part. As to the main body of air moving through the incubator, I believe the drawing shows a general course and the outward movement of the air from the fan is guided along by the side walls, ceiling or floor.

I know about ordering of tobacco only from what I gather by reading the patents in evidence, and my understanding is that ordering means treatment of dry leaf tobacco, which is quite brittle and liable to break, with moist atmosphere so as to cause the dry tobacco to take up moisture until it becomes soft and pliable and can be easily handled in making cigars or whatever you want to make of it. It is my understanding that the moving volume of air in the ordering machine deposits moisture upon the tobacco so as to cause absorption of the moisture by the tobacco, and this calls for a very moist atmosphere within the ordering machine, possibly beyond the dew point. I believe Proctor heats water in the water tray and refrigerates the air just before it reaches the water trays with the idea of lowering the dew point so as to absorb a great deal of moisture, and when it gets over on the other side it gives up that moisture. I do not

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remember what the dew point is at various temperatures and I do not know what percentage of moisture is used in these incubators for successful hatching, although I do know that there must be a certain amount of drying of the eggs. In both Schwartz and Proctor, No. 553,723, which are the patents I referred to as showing the structure most nearly approaching that of Smith, the tobacco is carried on trucks which run in through open doors, so there must be doors in the machine but I do not believe there are disclosed any openings or ventilaters which are specifically provided to admit fresh or emit foul air, and I do not see any special reason why there should be any in that particular use. I do not know what would happen to the eggs if placed in one side of the machine built according to the Proctor patent, 553,723, with tobacco on the other side.

From the fact, as testified, that the racks in the Robbins incubator are filled to one-sixth of their total capacity in the tilting trays at one setting, there would be about one-sixth as much capacity in the hatching compartment as there is in the incubating compartment. I understood it was a sixth of the time, but if it is one-third of the time it would therefore be one-third as large and it depends upon the proportion of the trays which are placed in the tilting racks at one filling and how many fillings are made for a full hatching.

In the Smith method the eggs stacked in the trays doubtless retard some of the air current, but in the Smith structure the air supply is forced to go through the bottom of the trays and between the eggs to get from the bottom up. It is a confined circuit up through there and therefore

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the air must pass through the bottom and up between the eggs. This is also true in the tilting trays and it must go through the bottom. I do not know who else noticed it in the Smith machine, but I did. I see that you have now stopped putting on those curtains which are between the tiers of the tilting racks so that in your machines, as you are building them, some of the current might go up between the racks but that isn't true in the patented structure and that is what those flexible things are put in there for, and it says so, as I recollect it, in order to compel the air to go through the bottom of the trays and between the racks. The air cannot get out by the eggs in the racks by going through the trays and following along the inclined racks. As shown in the patent there are five different tiers and they are all connected by these flexible strips, so that there is no way in the world for the air to get up through the things. There would seem possibly to be a little space back behind there, but that is what Smith says those strips are used for. After the air gets up through the first trays I do not know where it goes. It cannot escape that course through the bottom of the racks and between the eggs until it gets up apparently beyond the upper edges of these flexible strips 28, and when it gets up above them it may move out underneath the eggs to some extent and probably would. I think the eggs in the trays would tend to make it follow the inclined spaces between the trays.

(Testimony of Robert L. Daugherty)

(Whereupon the cross examination of the witness Samuel E. Fouts being postponed), one

ROBERT L. DAUGHERTY

was called as a witness in behalf of the defendant and, being first duly sworn, testified as follows:

DIRECT EXAMINATION

by Mr. Farrar:

My name is Robert L. Daugherty and I reside in Pasadena.

"Mr. L. S. Lyon: If your Honor please, we will concede that Mr. Daugherty is head of the Mechanical Engineering School of the California Institute of Technology, and an expert mechanical engineer, and is qualified as an expert witness on mechanical engineering matter, in patent cases, so it won't be necessary to qualify him in that respect. I don't know what his incubation expertness is.

"Mr. Farrar: Thank you for the admission, Mr. Lyon. I would like to get a little more in the record, however."

I graduated from Stanford University in 1909 and was given an advanced degree on a thesis that I submitted. Since my graduation I have been continuously occupied in a dual capacity, as a teacher or professor of mechanical engineering and as a consulting engineer. I first taught at Stanford University, then at Cornell, next at Rennselaer Polytechnic Institute, Cornell University, and then in my present position with the California Institute of Technology, where I am now completing my eleventh year and where I am head of the mechanical engi-

(Testimony of Robert L. Daugherty)

neering department. My specialties have been hydraulics and thermo-dynamics, and their applications, such as heating and ventilating and refrigeration, and, of course, hydraulics covers the flow of fluids of all kinds, liquid and gases. I am, as admitted, not a practical incubator operator.

I have made an examination and study of the patent to Smith, No. 1,262,860, in suit, marked plaintiffs' Exhibit No. 1, and I saw the Smith and Robbins incubators at the warehouse visited the other day. I also saw a Buckeye incubator, but it was not in operation. I have studied the specification and claims of the Smith patent and likewise of the Robbins patent.

The Robbins machine which I saw was at Gardena, and which I first saw on last Sunday, and then again day before yesterday, and which was identical as to size and type with the one seen in the warehouse in Los Angeles day before yesterday. The number of the incubator was 23.

I have examined the exhibits, introduced by plaintiffs in this case, purporting to show the course of the air currents in the Robbins machine and marked exhibits 10, 11 and 12. I have an identical copy with plaintiffs Exhibit No. 12 that is before the court and I have made a study of the air currents as indicated thereon, as well as a study of the air currents as I actually found them and upon which a comparison or a contrast can be based. When observed by me the machine was actually loaded with eggs.

I am asked to explain what air currents I have found and to contrast or compare them with the chart, Exhibit

(Testimony of Robert L. Daugherty)

12. On Exhibit 12 there is a line XY towards the left, which is supposed to mark the boundary between the hatching compartment on the left and the incubating compartment on the right, and this Exhibit 12 shows arrows indicating that air flows from the hatching compartment on the left across this boundary line into the incubating compartment on the right. I found, if anything, the reverse to be true in the machine filled with eggs in service at Gardena. In fact, the air currents were practically in the opposite direction and there was more of a tendency for the air to flow into the hatching compartment than the reverse.

I look at Exhibit 12 the bottom whereof would be the front of the machine and the place stated is on the plane of axis of the fans.

As I stated, the air currents instead of being from the ends of the machine around the front and towards the center are actually from the right of the machine, as you would look at it, from the front towards the left.

I have been asked to mark in red ink on the copy of the exhibit which I have, the course of the air currents as I actually found them in the machine in operation. I would say these arrows in red indicate more nearly what the circulation of air is in the machine as I found it when filled with eggs. The irregular line which I have drawn along some of the arrows which were already on the chart before I began to mark it, indicates that those original arrows are incorrect for the conditions as I found them in the incubator filled with eggs.

Again considering the chart and assuming you were looking into the machine from the front, the air course

(Testimony of Robert L. Daugherty)

on the right-hand side of the machine was from the rear towards the front.

When I made the tests above mentioned I was inside of the incubator with the doors thereof in a closed position so that, except for the presence of myself, the machine was actually as it operates.

I used an anemometer in making the tests and also used a light paper strip on the end of a stick of wood. I was in the front of the machine and found there quite a decided current going from the right-hand side for the most part over to the left-hand side.

With respect to Exhibit 12 the original arrows in the middle portion all point towards the rear, turning from the front to the rear, at about the middle portion, or the middle length, crosswise, but I did not find the air currents turned inward at that point as indicated hereon. Air currents flow all along the front, but the turning point will be nearer this line X-Y than in the center. I mean that instead of turning at about the central portion, as indicated on Exhibit 12, they pass more to the left and turn along the line X-Y. The arrows I placed on the chart show that.

I did not expect to find the currents flowing in the machine as I have described them as I had thought they would perhaps be more like they are shown on this Exhibit 12.

I saw the tests made at the warehouse at Los Angeles, and the chart Exhibit 12, so far as I am aware, is consistent with the indication of the currents of the tests made at the said warehouse, but I found them otherwise in actual operation with the machine loaded with eggs.

(Testimony of Robert L. Daugherty)

There are many currents in the Robbins machine in actual operation. They are definite currents but not easily defined.

I heard Mr. Taggart's testimony given in this case and I am asked to compare or contrast the method of operation of the Smith machine, as disclosed by the Exhibit which we saw at the warehouse the other day and by the tests which were made and illustrated in the testimony given herein, with the Robbins machine.

There is a definite circulation of air in each machine. In Smith this definite circulation is brought about by a purely mechanical arrangement, that is to say, by the curtain which divides the central corridor from the egg compartments, and almost anyone, by a mere inspection of the machine, could tell in what direction the air would flow through the egg compartment because the curtain insures that.

"If the curtain were removed, then of course there would be no such definite circulation established. In the Robbins machine there is also a definite circulation, but not so easily defined, because there is no mechanical arrangement such as a curtain or partition to compel it to flow in any particular way."

It is largely because there are air dynamics relations involved that the air takes the paths that it does take. It is brought about very largely, I would say, by the relations of the dimensions of the diameter of the fan and the dimensions of the box in which the fan is placed. If those dimensions were changed then, undoubtedly, the boundaries of the air streams would be changed. In the Smith the circulation is rather obvious, but in the Robbins

it is not obvious at all. One would have to take an anemometer or strips of paper, or other equivalent means, to study out the circulation of the air.

The Smith machine operates with a relatively small diameter fan and with a relatively high speed as compared with Robbins, which has a larger diameter fan at a slower speed, and that is one of the reasons for the difference. As far as the circulation through the eggs is concerned, according to the patent, in the Smith machine the fresh eggs are put in at the top and are progressively moved downwards towards the bottom, so that the hottest eggs are at the bottom and the coldest eggs at the top of this column of eggs, and the circulation of air is such that all of the air is compelled to flow in through the bottom and rise up through the top, "so that a given particle of air goes successively through every layer of eggs, starting with the hottest eggs and finishing up with the coldest eggs. The Robbins machine is quite different from that, because the flow, I might say, would be more parallel, instead of in series, that is, the eggs are put here and there throughout the machine, and the currents of air flow in through the trays, so that a given particle of air in its circuit through comes into contact only with the eggs in one set of trays and does not pass in series through all of them from bottom to top." Most of the air in the Smith machine goes through the hatching trays first. The patent drawing discloses that all of the air would have to go through the hatching trays first and then into the incubation trays second. In the Robbins machine that is not the case at all. The air does not flow from the hatching eggs over into the incubating

(Testimony of Robert L. Daugherty)

chamber to any extent whatever. In fact such interchange of air as there is seems to be very largely in the other direction. There are one or two little spots where I detected a slight current of air going from the hatching chamber over to the other, but the prevailing flow was in the other direction, so that I could not say that any appreciable amount of air went from the hatching chamber over into the incubating chamber.

In the Smith method the air is introduced below the hotter eggs first and then moves upwardly through eggs arranged progressively, with the newer eggs in the process of incubation at the top. There is no arrangement at all like that in the Robbins machine. I understand that after the eggs have been retained in the so-called incubating trays of the Robbins machine for approximately eighteen days they are then removed to the section on the left side of the machine, which has been termed the hatching section, which would then contain the hotter eggs, or contain eggs in a corresponding stage of incubation with those at the bottom of the Smith machine.

In the Robbins machine the air does not in any appreciable way or to any appreciable extent pass from the hotter eggs in the hatching section to the cooler eggs, although they may be in different stages in the incubating section.

I found a slight flow of air from the incubating section into the hatching section in the Robbins machine which

represents a movement of air from the relatively cooler to the relatively hotter eggs, or, in other words, the reverse of the proposition set forth in the Smith process.

I do not find in the Robbins machine a central corridor in which there are no eggs at all.

(Whereupon an adjournment was taken until 9:30 o'clock Saturday, March 29, 1930.)

DIRECT EXAMINATION

of the witness

ROBERT L. DAUGHERTY

by Mr. Farrer resumed:

I am a member and vice-president of the national organization known as the American Society of Mechanical Engineers. It was Thursday that I made a study of the Robbins machine at Gardena.

In having stated that in the Smith machine the circulation is rather obvious but in the Robbins machine it is not obvious at all, I referred to the directions of the various air currents. Of course, it is obvious in the Robbins machine that there is some circulation of air, but just exactly what paths those currents of air follow are not obvious until one makes a study of it to find out. In other words, while there are obvious currents in the Robbins machine the course is not obvious.

In the Smith or Buckeye machines it is the curtains which are very largely responsible for the path that is followed by the air. If those curtains, or partitions which I understand are used in one of the machines, were removed, my opinion is, the circulation of the air in the

(Testimony of Robert L. Daugherty)

Smith and Buckeye machines would be quite different and that all of the air would certainly not go down to the bottom and pass up through the hatching trays and on up through the other trays, as it does now, but would enter the various trays at different points in a vertical column. My opinion would be that it would be very much more like the Robbins machine if the curtains were removed.

The most essential difference in the direction of the air currents in the Smith and Robbins machines is brought about by the curtains or partitions in the former. The second to that is the proportion of the fan diameter to the diameter of the chamber in which the fan is placed, but certainly the most essential feature there is the presence of curtains or partitions. I do not find in the Robbins machine any equivalent for the feature in Smith whereby fans blow downwardly through a chamber which is empty of eggs and trays.

(Whereupon the Master, having overruled plaintiffs' objections to the last said question and answer, an exception was entered for plaintiffs.)

I have before me Plaintiffs' Exhibit 12 whereon I made yesterday certain marks in red ink to indicate the air currents. Assuming that the air currents are not as I have testified, but as testified to by witnesses for the plaintiffs, and as shown on Exhibit 12 without my markings, even then, the Smith machine and the Robbins machine are dissimilar. Still assuming that the circulation is as contended by plaintiffs herein, the difference is due to the fact that the circulation in the Smith machine

is compelled to follow a certain definite course by virtue of the curtains or partitions, whereas a circulation in the Robbins machine, even if it were as shown in Exhibit 12, would be merely due to aerodynamic relations brought about by the relation between the two fan blades and the box in which they are placed, and, furthermore, as has been stated before, every particle of air in the Smith machine goes through all of the trays of eggs in series, starting with the hatching or warmest eggs, and leaving at the top where the eggs are coldest or most recently placed, whereas the circulation in the Robbins machine, as shown in Exhibit 12, would not call for any such flow of air throughout the eggs whatever.

In the Robbins machine, with the air currents traveling as indicated by the testimony of the plaintiffs, or with the air currents traveling as I have testified that I have found them, there is no definite provision made that would compel the air to flow in one direction or the other except the aerodynamics involved. There is no mechanical device, such as partition, curtain or wall, to compel the air to follow that course and one could not tell by mere inspection of the machine which way the air would flow.

It is a fact that in the Robbins machine the air current is just as likely to strike cold eggs first as it is to strike hot eggs first and, in fact, that is what I found when I made my inspection at Gardena on Thursday. Exhibit 12 shows only a part of the air flowing from the hatching section over to the incubating section and the greater part of the air does not apparently flow through the hatching section at all. I am unable to tell in the Robbins

(Testimony of Robert L. Daugherty)

machine which eggs, particularly in the incubating section, the air will first strike.

Comparing Exhibit 12 with Exhibit 11 I find that the former shows a section in the horizontal plane while the latter is a section in the vertical plane.

(Whereupon the copy of Exhibit 12, upon which the above marks in red ink were made, was offered by defendants as Exhibit D and accepted and received in evidence.)

I have prepared a sketch which will show in somewhat less detail than said Exhibit D the air currents as I found them in the Robbins machine.

The sketch marked Exhibit E shows the directions of the air currents as I found them in the Robbins machine completely filled with eggs, in both the incubating and the hatching sections, with the construction in approximately a horizontal plane through the shafts of the two fans. The line X-Y represents the dividing line between the hatching and the incubating sections and is identical with the line X-Y on Plaintiffs' Exhibit 12. I have attempted to show on sketch Exhibit E only the air currents in that dividing line and some that are in the front of the machine and, also, the return air course primarily between the two sections of the machine. I do not at all mean that there is no return air course through the other sections of the machine. These are simply some that I investigated when the eggs were in there, it being rather difficult of access. Air would pass through all of the racks in the incubating section, but I did not indicate that on this sketch the primary purpose of which was to show that there was very little flow of

(Testimony of Robert L. Daugherty)

air between the hatching section and the incubating section and that on the whole there was a slight flow over into the hatching section rather than the reverse and, of course, the sketch is not to be construed as showing all of the air currents in the machine, but it does show the more pronounced currents.

(Whereupon counsel for defendant offered as defendant's Exhibit E the sketch last referred to and which said sketch was accepted and received in evidence and so marked.)

CROSS-EXAMINATION

by Mr. L. S. Lyon of the witness

ROBERT L. DAUGHERTY.

The Robbins machine, No. 23, which I saw at Gardena was in the Goddard Hatchery. I do not know its capacity, although I heard someone say it was 23,000 eggs. I only know that the machine was filled with eggs throughout and I do not know their arrangement as to the stage of incubation. The directions of current movement, that I have shown in Exhibit D, were determined by anemometers and verified by observing a light paper strip on the end of the stick which I used. The latter show very simply the actual direction of the current while the former when placed in any one position shows only the component of direction and the magnitude of that component which, of course, the paper strip does not directly, although you can tell to some extent from observing it. I undertook to measure only the directions and not the

(Testimony of Robert L. Daugherty)

magnitudes of the currents on Exhibit D. It required approximately one hour for me to make my determinations of the currents by means of the paper strips and the anemometer.

"Q. When you say that the path of these currents in the Robbins machine was not readily determinable, you don't mean to say that those paths are not readily determinable with an anemometer and with ribbons, do you?

"A. No. I mean one can't simply look at the machine when it is not in operation and say that he is sure the currents in a certain place will move in a certain direction. You can easily find it out if you go into the machine with some kind of an instrument or device when it is in operation."

With the Smith machine I think I could look at it and tell that the current would be moving upward through the egg compartment because of the shape of the apparatus. I do not know whether it would make any difference in the effect on the eggs whether one could determine the direction of the currents with or without employing a ribbon or anemometer, as I am not an expert on incubation. I believe that the amount of air introduced into the Robbins incubator through the restricted inlets and then expelled is somewhat less than one per cent of the total amount of air in the machine, and that means that on an average, air entering the machine will circulate therein at least ninety-nine to one hundred times before it departs. The approximate volume of that incubator is 360 cubic feet and each one of the fans rotates at 208 revolutions per minute and their direction of move-

ment as one faces the machine is counter-clockwise. The amount of air delivered by such a fan depends upon the speed thereof, the pitch of the blades and its diameter. I did not measure the quantity of air being delivered by the fans in the Robbins machine at Gardena and I do not think it could be computed in a direct way from the diameter and pitch of the fans, and I would not say that those fans would deliver at least 6,000 cubic feet per minute, based on the measurements and speed of rotation within my knowledge. I cannot state how many cycles the air would be making in the Robbins machine in a minute, because that would depend upon a very thorough investigation of all the velocities, which vary widely, and besides the air goes in different paths, all of which make a very complicated matter to determine. I did not undertake to do this because I did not think it was pertinent.

If one knew the paths of those currents of air delivered by the fans one would have at least the order of magnitude, knowing the amount of air in there. I do not know whether it would be above 50, as some velocities are fairly high and some are pretty low. Of course, that would be true if we are to accept the premise that the Robbins fans are at least fifty times the total volume of air in the incubator. Those fans, due to their being mounted adjacent to the back wall of the machine and supplied only with less than one per cent of entran e of air, very largely deliver the air radially in the planes of the fans as distinguished from the fan that delivers the air axially. As one faces the machine those Robbins fans deliver the air substantially equally to the right and

(Testimony of Robert L. Daugherty)

left, and it may be true that as much air travels around the left-hand end of the machine, as you face the machine, as there is traveling towards the front of the machine on the right-hand side, and the air on the left, in traveling from the fan to the front, passes over the hatching eggs and then, in order to reverse its direction mushrooms against the front wall of the machine during which there is a period of time, when the air moves parallel to the face of the machine in following a curved path, but does not materially change in velocity or magnitude, it only changes in direction. The front wall of the machine is one factor which changes the direction of the air and another is the reduction of pressure around the center of the fan because the air, due to centrifugal action, is moving out radially therefrom. In other words, the action of the Robbins fan tends to pull air into the eye of the fan and the effect of that reaches to the front wall of the machine. Air flowing at any velocity undergoes a continual eddying, or, in other words, whenever velocities are of a considerable magnitude air eddies exist, and that is also true of the Smith machine, notwithstanding the partitions. The flow of all fluids is turbulent unless kept down below what we call the critical velocity and, or course, these Robbins and Smith machines do not operate below that. In a flowing stream of any fluid, so long as the velocity is above the critical point, the particles do not move in straight lines parallel to each other, but in very turbulent, irregular and sinuous paths and the flow of any fluid under such conditions is a series of progressive eddies. But that does not contradict what I said before about the flow of the currents

(Testimony of Robert L. Daugherty)

upward in the Smith machine, or any other machine, because I distinguished between the predominant current and the secondary eddies that always exist in connection with it. That distinction is based on the magnitude and not on the current as compared with the eddy. As an illustration, a river flows downhill and yet small eddies occur throughout that stream, and yet the flow of the stream is downward continually. Eddies will be formed in the corridor of the Smith machine, and you can't have any fluid flow without eddies unless you keep below the critical velocity, and likewise there will be eddies in the corridor of the Smith machine where the body of air strikes the floor and is turned back. That air where it mushrooms is simply turned in a curved path instead of continuing in approximately a straight line, as far as you can use that word, in view of the fact that all flow is sinuous under those conditions and might be analogous to a stream of water striking the wall and bounding back, except that it isn't a jet of water and is a solid stream without any bounding back action. It would be more like a solid stream of water in a river striking some bank and being turned or deflected by it, because there are particles of water or air that never touch the wall at all and are only changed by virtue of pressure by adjacent particles.

The movement of its air and its return to the fan up the column of trays in the Smith machine would then be gradually accelerated. As to whether or not it would be moving as fast at the bottom of the column, or at the floor, as at the top near the fan depends on the areas through which it flows, because the eggs would cause

(Testimony of Robert L. Daugherty)

variations in the cross-sectional area of the stream, but if that area remained the same and the density of the air was the same there would be an equal velocity. There are different velocities of air in the column of egg trays in the Smith machine. Velocities are not uniform through a stream ordinarily and certainly not so in this case, which is true of the Robbins machine and in fact is always true in any flowing stream of any fluid. It is the action of the fan that circulates the air in the Smith machine and propels it up through the column of trays therein. The fan draws the air in at one point and discharges it at another and that causes the air to circulate in a closed circuit. In that respect the action is the same as in the Robbins machine and in fact all fans act alike in that regard.

While the air is passing back of the fan up the column of egg trays in the Smith machine, eddies occur therein and portions of that air move in different velocities with respect to other portions and I think it is true that the tilted trays filled with eggs providing substantially 45° planes are partitioned with paths through them which tend to deflect the air across the trays.

I have made no tests to determine to what extent the air in its return to the fan up the egg trays in the Smith machine passes through the trays from one tray up to the next as distinguished from passing across the trays, over the sides of the trays and up the space between them, the ends of the trays and the walls of the incubator. My opinion would be that more air passes in between the trays than actually passes in between the eggs, because of the relative space involved. I think that the

(Testimony of Robert L. Daugherty)

air passing in between the trays would go to the top of the 45° channel provided between two trays and then continue between the ends of the trays and either the partition or the wall of the incubator, depending on which way the trays are tilted. While I did not measure them directly as to magnitude, I would say that the currents I have produced on Exhibit E are rather strong currents as compared with other currents found in the machine. As to whether or not the currents are stronger than all others I would say that back where the fans are located the currents would be stronger than any in the front of the machine. The strength of a current may be determined by the speed of the anemometer placed in its path. I did not measure the magnitude of any currents and was concerned only with finding out the courses or paths followed by the currents of air. I would judge that the currents indicated on Exhibit E have a somewhat smaller velocity than those across the hatching trays coming from the fans, but I do not know how much smaller as I made no measurements of that kind. I am referring only to section X-Y when I say that Exhibit E indicates more pronounced currents, although I did not measure them, where the direction of the current changes from forward to rearward, as I was trying to find out whether air flowed from the hatching section over into the incubating section and I found it did not appear to do so to any extent. I made my determinations on all planes from top to bottom, although I show on Exhibit E only the one plane, which is representative, although there was one little place in the extreme upper right corner next to the top where a small current of

air flowed over into the incubating section, but most of the flow from top to bottom and from the front to the back was the other way, or with very little flow at all across the boundary.

I did not measure the magnitude of the current that would return from the hatching trays to the incubating trays, but it was very small and at times the anemometer would scarcely run at all, or would stop and then run a little bit. It was not a very high velocity and had I moved the anemometer an inch or two I would get out of that current, so that the volume which is the product of the air in the cross-sectional area would be very small. In determining the paths of the currents as indicated on Exhibit E I made tests as far back as I could reach, which was about two-thirds of the way; I could not very well do more because of the fans being in action, under which circumstances I would not care to stand and take readings. The doors were closed while making my tests and I stood between them and the incubating trays, which latter were in an approximately horizontal position and not in the position they occupy during the incubation process, although I do not think that would make any material difference. I made no actual determination with the trays in their tilted position because I did not think it was at all necessary.

The path of the return of the air in the Robbins structure is to the eye of the fans and, except for obstructions of a mechanical nature which might be in the incubator, the air would tend to move in the shortest path to the eye after its direction is reversed. The eye of the fan is just to the right of the line X-Y drawn on Exhibit E

(Testimony of Robert L. Daugherty)

and to the somewhat skeleton-form of partition composed in the Robbins machine by the supports for the hatching trays. When the air, coming from the right-hand side along the face of the machine, is reversed in its direction so that it tends to return to the fan, it takes the shortest path back, and as to whether or not it passes over into the hatching trays I can only say that I did find some very slight currents facing that way, but the fundamental thing I found was that there seemed to be an almost negligible interchange of air between the hatching and incubating sections. I made no determinations as to temperature conditions in the Robbins machine. Within narrow limits the circulations of air in the Robbins incubator would equalize the temperatures therein. There would be slight differences in temperature, I would assume, in different places. The variations in temperature I think would be somewhat less in the Robbins machine than in the Smith machine because in the latter there is a different order of arrangement of the eggs from hot to cold and a different circulation of air through that in the reverse direction. Although I did not measure any temperatures and any difference as between the two machines in that respect is a mere matter of my opinion.

Referring to the Robbins catalogue in evidence herein, on page 6 it states the right temperature with slight variations and that is exactly what I would expect; all talk about uniformity is relative, but the circulation of air in the Robbins machine tends to maintain a constant temperature and the same tendency occurs in the Smith machine. The uniformity of temperature throughout the Robbins machine is produced by the circulation or move-

ment of air as propelled by the fan, and during that travel of the air it takes, or absorbs heat from the hotter eggs and, as I understand, gives out heat to the cooler eggs, which said action leads to the uniformity of temperature obtained in the Robbins incubator.

In the Robbins machine eggs are arranged at different levels. The Robbins machine is a substantially closed chamber with restricted openings, which is essential to the production or existence of the closed circuit we have been discussing, and the circulation or current movement in the machine is due to the action of fans rather than to convection currents and mere differences in temperature.

Aerodynamics, as used in my preceding testimony, simply has to do with forces and velocities that are produced by virtue of the motion of the air and the action of the fan blades. The arrangement of the fans in the Robbins machine so that they discharge radially, as I have previously remarked, is a matter of aerodynamics because if the location of the fans were changed and the dimensions of them relative to the box it might entirely change the direction of the currents flowing. The presence of the confining walls of the incubator chamber, tops, bottoms and sides, front and rear walls, on the direction of the air movement in the incubator, are all a matter of aerodynamics, which includes in its meaning structural features that affect the path of the magnitude of the current.

In the Smith machine the fact that the fans are mounted at the top of the incubator instead of being mounted outside the machine is a matter of aerodynamics too. As to whether or not the partitions in the Smith machine

(Testimony of Robert L. Daugherty)

which tend to direct the currents are a matter of aerodynamics, I am distinguishing here, by my use of that word, just mechanical means in my testimony, and the curtains or partitions are the things that divide the current going down on one side from the currents going up on the other side, while in the Robbins machine there are currents flowing from front to back and back to front without any mechanical partitions between the two, and that is a purely aerodynamic proposition. Those curtains or partitions are mechanical devices which have been placed in there to separate currents moving in opposite directions, whereas the Robbins machine contains no such mechanical device. The distinction is entirely one of apparatus rather than flow of air currents themselves. In one case there is a mechanical dividing wall and in the other case no such mechanical dividing wall, but it is only what I would call some of the streamline conditions that determine the flow.

"Q Now, if you increase the air that is delivered by the fans in the Smith machine by larger fans, with different pitches or greater speeds of revolution, so that you increase the magnitude of the current down the corridor, would it be possible to produce a current that would last to the floor of the machine, without the curtains being present?

"A Without the curtains?

"Q Yes.

"A Yes, if the velocity were very great of the moving particles of air.

"Q And if you did that, then that current, on striking the bottom of the incubator, would be mushroomed and

(Testimony of Robert L. Daugherty)

drawn back to the fan through the egg trays or along the egg trays, would it not?

"A Yes, practically so.

"Q In other words, you can get the equivalent effect, so far as the current is concerned, by a different capacity fan, you might say, in place of the curtains, isn't that true?

"A In some degree. By different capacity of fan, I want to make clear that I restrict this only to the case where you have a very much higher velocity of the air particles downward, so that the inertia effect of the air would keep it from deviating from that downward path.

"Q But that would give the same current movement substantially as the currents give to the less velocity of air propelled by the fan, is that correct?

"A Yes, I think that would be true, at a high enough velocity."

REDIRECT EXAMINATION

by Mr. Farrar:

As to how much velocity would be necessary, in an apparatus like the Smith machine, to have the return air current directly up through the egg trays without curtains I do not believe it is capable of calculation, or at least I do not know how to calculate it. That would have to be found out by experimenting. I would say it would have to be quite a number of times the present velocity and I do not think it would be practical in an incubator.

"Mr. L. S. Lyon: I object to that. The witness has definitely stated that he is not an incubation expert, and I

don't think he has any right to express an opinion on whether it would be practical or not in incubating eggs."

Without passing on the problem of incubating eggs successfully, I would say that such a current requires quite an excessive consumption of power to produce the high velocity because the power increases very rapidly with less circulation and the current would be necessarily many times stronger than the present one. There would be eddies in that current and also in the return current and there would be a direct flow up through the eggs as well as in the space between the trays of eggs. The prevailing velocity would be directly down the corridor and directly up the egg compartment.

"Q Now, I take it that your answer is that if your currents were sufficiently strong, several times the current which is used in the Smith machine, that you could accomplish a downward current through the corridor and upward through the eggs, without the use of the curtain?

"A Yes.

"Q But that would take a materially stronger current than is now used?

"A A very much larger velocity than is now employed.

"Q In the Smith machine, as it is operated, on the return air current you have described, in answer to a question on cross-examination, the general course of the air, stating, as I recall, in substance, that probably more would pass between the trays than through the trays.

"A That is correct.

"Q That would be due to the fact that there is less resistance between the trays?

(Testimony of Robert L. Daugherty)

"A Yes; the space between is so much greater than the interstices between the eggs.

"Q And the course of air is always along the line of least resistance?

"A It is."

Most of the air passing from the rear to the front in the hatching section of the Robbins machine passes between the trays and the course of the air, other than this well defined course between the two sections, would also be back between the trays, because the space there is larger than between the eggs and the resistance to the flow so much less. There is an appreciable open space between the top of the eggs in one tray and the bottom of the tray above, extending clear across in the incubating section and the air would take the line of least resistance when it was moving forward or backward, regardless of whether it was an impelled or induced current. Any air in circulation which carries a temperature higher than the objects with which it comes in contact tends to yield heat to those objects and to raise the temperature, and conversely, if the air is cooler than those objects it will absorb heat therefrom. That is a natural law and is universally true. In the Smith machine, and regardless of deflections in the air currents caused by any obstructions, as the air rises through the tray of eggs behind the curtains the general course must be upward and no other course could be possible. The only variance would be caused by the obstructions in that general course.

(Testimony of Robert L. Daugherty)

RECROSS-EXAMINATION

by Mr. L. S. Lyon:

The general course of the air returning to the fan in the Robbins machine is horizontal, except that when the trays are tilted it naturally has to pass up more readily between them than it does to go through all of the eggs, and in that respect the Robbins and Smith machines are very similar.

In answer to a question stated by the Master the witness continued as follows:

I did not measure the volume of air moved in a given period of time by the fans in the Robbins machine as compared with the fans in the Smith machine.

"THE MASTER: Just one point, Doctor. Did you compute or did you estimate the volume of air moved in any given period of time by the fans in the Robbins machine, as compared with the fans in the Smith machine?

"A No, I didn't measure that amount of air in either machine, nor would I undertake to state what it would be.

"Q BY THE MASTER: Some calculation was made by Mr. Taggart. What was your calculation, Mr. Taggart?

MR. TAGGART: The volume of air moved by the fan in the Smith machine, as given to us by the manufacturer of that particular machine, is 1,455 cubic feet per minute. That is running free without any resistance. In the Robbins machine—

THE MASTER: That is one fan, you say?

A Yes, one fan.

THE MASTER: There are three fans?

(Testimony of Robert L. Daugherty)

A There are four fans.

MR. L. S. LYON: In the 52,000 egg machine.

MR. TAGGART: In the Robbins machine the fan is 60 inches across, and on the face of that you have an area of better than 12 square feet, in which the air is moving into the fan at a rate of 500 feet per minute or better. There are some places, right at the eye of the fan it is approximately 400 feet, and a little further away from the fan it reaches 600 feet, a little further away from the eye of the fan it reaches 600 feet, and there is an area of over 12 square feet in which the average velocity is above 500 feet.

MR. L. S. LYON: What does that mean?

MR. TAGGART: In which the speed, I should say, is 500 feet per minute or better. This gives you a volume of better than 6000 cubic feet of air per minute for each of the fans.

THE MASTER: Well, would the amount of air moved in the Smith machine be less than the rating given the fan?

MR. TAGGART: Slightly, yes, sir.

THE MASTER: What is the comparative size of the two compartments?

MR. TAGGART: The Robbins machine is about 360 cubic feet, and the Smith machine 850 cubic feet.

MR. FARRAR: That means the machines that we have looked at?

A Yes, sir.

THE MASTER: I am referring to the two machines in the warehouses, the ones that are in evidence.

MR. TAGGART: Yes, sir.

(Testimony of Robert L. Daugherty)

THE MASTER: Then there would be around between two and a half to three times, according to your figures, the volume of air in motion, compared with the size, that is, from two and a half to three times—in the Robbins incubator two and a half to three times that of the Smith?

MR. TAGGART: The volume of air moved in the Robbins machine by the two fans is 12,000 cubic feet, each fan moving something over 6,000 cubic feet.

THE MASTER: I was only figuring one fan. That is double my figures.

MR. TAGGART: I beg your pardon. The volume of the Smith is about two and a half times the volume of the Robbins, the cubical contents.

THE MASTER: I understand that, but what I am trying to find out is, considering the area, or the speed of the fans and the size of the fans, I am trying to figure out what relationship there is between the volume of air that is moving.

MR. TAGGART: In the Smith machine the four fans are moving something less than 6,000 cubic feet of air a minute. In the Robbins machine they are moving better than 12,000 feet.

MR. O'BRIEN: You mean the two fans?

MR. TAGGART: Yes, and the four fans in the Smith.

THE MASTER: And in the Robbins machine the two fans are moving some 12,000 feet per minute?

MR. TAGGART: In area that is about two and a half—

(Testimony of Robert L. Daugherty)

THE WITNESS: Divide the 6,000 by 850 cubic feet. In this case divide the 12,000 by 360 cubic feet, and that will give you something I think you are trying to find out. That will show the relation between the volume of air circulating and the volume of the face.

THE MASTER: You have done that?

THE WITNESS: Well, I haven't done it. It is approximately 30, and the other is approximately 7, so it is about 30 divided by 7, so it is about 4 or 5 to 1 ratio, just about a 5 to 1.

THE MASTER: You were discussing with Mr. Lyon a little while ago the effect of the curtains in the Smith incubator. If you were to remove the curtains from the Smith incubator, would this figure give you any idea as to how much you would have to increase the fan capacity in order to obtain approximately the same result?

THE WITNESS: As to the path that the air would follow?

THE MASTER: No—as to the successful circulation of the air for the purpose intended here. You stated that if the curtains were removed and there were no compartments divided off, that the fans would have to be increased, that is, the amount of air moved would have to be increased, by increasing the size of the fans, or something like that. Would this ratio that you worked out here—

A (Interrupting): Oh, I see what you mean.

THE MASTER: Would it be in that order?

A Yes; I should say that would be a reasonable assumption; that would be a very good assumption.

MR. FARRAR: Now, what does that mean, please?

(Testimony of Robert L. Daugherty)

A If we take the cubic feet of air per minute that is circulated and divide it by the volume of the machine, in each case the ratio of those two factors is about 5 to 1. Therefore, if we were to remove the curtains in the Smith machine and were to speed up the fans so that we had five times the velocity that they now have, it might cause the air to circulate in about the same sort of a path that we would get with the curtains on.

MR. O'BRIEN: And how much more motor power would be required?

A Well, you would have to circulate five times as much air, and that would be five times the power for that alone, but there would be a greater pressure difference built up as a result of that too. Ordinarily that would call for the power varying as the cube of the speed of the fan, and if we ran the fan five times as fast, that would mean 125 times as much power required."

RECROSS-EXAMINATION

by Mr. Farrar:

If the curtains were moved from the Smith machine and the result obtained by the increase in the flow of current I think it would necessarily mean a violent current.

(Whereupon adjournment was had until 2:30 P. M. of the same day for the purpose of visiting the Goddard Hatchery, 17601 South Normandie Avenue, Los Angeles, with the intention of examining the Robbins machine in operation upon the invitation of counsel for defendant, as to which machine the witness has previously testified.)

(Testimony of Samuel E. Fouts)

SAMUEL E. FOUTS

recalled.

REDIRECT EXAMINATION

by Mr. O'Brien:

I was brought up on a farm and took care of a lot of chickens, but we did not use incubators in those days. My first experience with hatching eggs by means of incubators occurred in 1903 or 1904, when I was practicing patent law in Cleveland and I had a client who made some inventions in incubators and I attended to his patent soliciting work. This client not only made incubators but he was using incubators as well, and in fact was getting into the poultry or hatching business. I visited his plant on two or three occasions and became interested in the matter myself. I was living at the time on a rather large plot of ground and I decided I would acquire some chickens and I borrowed an incubator from this client. It was rather a crude affair, merely an old wooden washtub, in the bottom of which my client had cut a hole for a damper controlled by a thermostat by means of which to expell hot air from the incubator. The eggs, of course, were put inside of the tub and the thermostat, when in position, was adjacent the upper surfaces of the layer of eggs and provision was made to let fresh air into the egg chamber by simply tilting the tub very slightly and sticking a wedge under one edge. I hatched out, I think, two broods of chicks. I know we had at least one brood from this tub incubator which was placed in one of the bedrooms in my home and we gave it as much attention as we would have a child. We

obtained what I considered pretty good results and I believe they compared quite favorably with the figures I have heard testified to as to results obtained with these large incubators in use at the present time. The chicks were fine too, and my belief is that I carried on that work throughout two hatchings.

The above represents the extent of my incubating experience in Cleveland, but, as I said in my qualifying testimony, I left Cleveland in 1910 and went to North Carolina, where I lived on a large place and there went into the matter of poultry raising on a more serious scale. We had the three incubators going for two seasons and raised quite a large number of chickens for egg purposes and other uses and for table purposes and meat and altogether had very good success. That continued for two years, or until I returned to Washington, and since that time I have had no further experience in incubator hatching.

I do not remember the trade name of the incubators I used in North Carolina, but I believe we obtained them from Sears, Roebuck Company. They were of sheet metal and somewhat like a tub, and I should think they were probably 12 inches high and between 24 and 30 inches in diameter, with a capacity of 100 eggs. The bottom of the incubators composed a flat chamber almost entirely filled with a kerosene or oil burning lamp with the main body portion inverted over that like a tub with, of course, the lamp situated in the center of this large disk-shaped receptacle. A flue surrounded the lamp flame and came up through the center of the incubator with the opening of the said flue controlled by a lifting

(Testimony of Samuel E. Fouts)

damper regulated by a thermostat. Instructions came with the incubator for providing moisture and we kept a sponge or rag saturated in a saucer of water continuously. The preceding represents the extent of my incubating experience.

My attention is called to the following part of my cross-examination: "Q. Therefore it doesn't make any difference as to the purpose of the moving of the cycle of air in what arrangement the eggs are placed relative to their age? * * * A. That may be true in a practical sense, yes. But I would not say it makes no difference as respects the patent." I am asked whether I wish to change or further explain the above said answer. As I understood the question at the time, and as I understand it now, the subject matter related simply to the matter of transference of heat from the hot eggs to the cooler eggs located in that air circuit, which is a continuous circuit and in which the air is carried around in cycles repeatedly. I could not see why there would not be that transference of heat from the hotter to the cooler eggs in that circuit under those conditions and that is all I meant to say. I did not mean to say, in using the term "practical", that such was true of commercial incubation. That was not in the question as I understood it and not in my mind. I did not intend to express an opinion, and would not, as to what effect such variations of arrangement of the egg trays would, or might, have upon the incubation of eggs in the Smith machine. I have never used a Smith machine and I do not know, and I have heard no one say anything about having ever used it with an arrangement other than

(Testimony of Samuel E. Fouts)

that which Smith discloses in his patent, which is to place the cool eggs at the top of the column and at the end of three days those eggs are removed and lowered in the tier or stack and their place taken by fresh eggs; in three days more all of the trays are again lowered to make room for another batch of fresh eggs at the top, and that continues in successive movements of the trays downwardly and the insertion of new trays at the top until the whole stack or column, or tier is full of eggs. When that point is attained the eggs first set are at the bottom and those next set are immediately above the ones on the bottom and so on until the fresh eggs are at the top. That is what the patent discloses and, as I said, I have never heard of anyone using a Smith machine in any other manner, so I do not know whether it would make any difference in the efficiency of the machine as a hatching device or not, and I do not know anyone who would know that.

My attention is directed to the following question and answer: "Q. That is, as respects the claims of the patent, do you mean? A. Yes. I didn't want to make a statement there might be understood as trying to interpret the patent but I say this arrangement you tried to bring out here makes no difference in the practical or commercial operation of the machine probably."

The above answer is correct as far as concerns the matter which I had in mind when I made that statement.

"THE MASTER: We all know in the examination of a witness that, if a witness goes beyond the scope of a question, that part of it may be stricken out upon the motion of the person making the examination.

(Testimony of Samuel E. Fouts)

MR. O'BRIEN: But the question was not definite, Your Honor. The question didn't refer to heat units at all. It says, 'Q—That is, as respects the claims of the patent, do you mean?' That didn't say anything about heat units at all. And what I want to know is if he meant to express an opinion as to the commercial use of machines in the incubation of eggs. I can ask him that question anyhow.

THE MASTER: As I understand it from the question up here above, 'I can arrange the trays of eggs in any particular arrangement and so long as it is in a closed cycle the air will carry the heat from the old eggs to the fresh eggs? That is right, is it not?

'A—I think it is; yes.'—you went on with further examination on that subject. I think the Judge understands this matter was with reference to carrying heat from old eggs to fresh eggs.

A That is all my answer was directed to.

THE MASTER: That is the clear purport of this testimony. Now, what is it that you are asking about?

MR. O'BRIEN: What I want to know is if the witness means to say that, regardless of the order of the arrangement of the egg trays in the racks, according to the Smith process, it would make no difference in the commercial operation of the machine in so far as the hatching of eggs is concerned.

MR. ELY: He has already committed himself on that.

THE MASTER: It is clear enough to me. I have glanced this over and it is clear to me. Now, what is there about it that you would think is confusing?

(Testimony of Samuel E. Fouts)

MR. O'BRIEN: I don't think he meant to say that so far as the hatching of eggs was concerned it made no difference or that the circulation of heat would be substantially the same.

THE MASTER: As I understand it, he says it doesn't make any difference in answer to this question so long as it is in a closed cycle; 'so long as it is in a closed cycle the air will carry the heat from the old eggs to the fresh eggs.' And then he goes on further on the same subject and to the same effect. Of course, if the witness has changed his mind about that, he may say so now.

MR. O'BRIEN: Yes.

Q Please answer the question, whether it—

THE MASTER: Ask him if he has changed his mind about it.

Q BY MR. O'BRIEN: Have you changed your mind about it, Mr. Fouts, with reference to the commercial hatching of eggs, if that is what it means?

MR. L. S. LYON: We object to that. Does he now think that the answer he gave is wrong?

THE MASTER: Don't argue with your witness. You are arguing with your own witness.

MR. ELY: It is cross-examination of his own witness.

A I can clean the whole matter up.

THE MASTER: All right; you had better go ahead, then."

I did not understand the question had anything to do at all with the commercial operation of the machine as to the hatching of eggs. I do not know what the effect of such changes as Mr. Ely had pictured on his sketches

(Testimony of Samuel E. Fouts)

might have upon the practical operation of the machine in the matter of hatching eggs. The only thing I had in mind, and the only thing I thought Mr. Ely was trying to elicit, was what difference it makes in a closed cycle with repeated circulation in a closed circuit of air as to whether the eggs are arranged in one order or varied in their arrangement. "The Master: You said it made no difference. Do you want to change that?" If I said it made no difference the only change that I would want to make is so far as I can see it couldn't make any difference. That is the way it stands in my mind and that is what I want the record to show. I do not know anything about what effect it would have on the hatching of the eggs. It might not work at all. As a matter of fact, I judge it must make some difference in the hatching of eggs because Smith stresses so strongly the desirability, if not the absolute necessity, of having the trays put in a certain definite order.

I did not mean so far as the final result in the incubation of eggs is concerned that it makes no difference what is the order of tray arrangement in carrying out the Smith process, and, so far as the incubation of eggs is concerned, I do not know. I would like to explain what I meant when I used the words "ultimate result". I meant ultimate securing of uniform temperatures obtained by the transference of heat units from the hot eggs to the cold ones. That is the ultimate result I had in mind and not the hatching of eggs.

The method of the Smith patent appears on page 2 of the Smith specification, beginning at line 79, as follows:

(Testimony of Samuel E. Fouts)

"It, therefore, appears that the improved apparatus and method contemplate the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform, and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal, and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated, and thereafter placing the eggs into final position for the hatching operation."

This is a broad statement of the method. The column of air in the Smith method as disclosed in the specification, is maintained by having a closed air circuit through which the air is repeatedly circulated. The method also contemplates, in moving these eggs from place to place in the column of air, that in the final disposition of the eggs the hottest ones are at the bottom of the column, and the air is so directed as first to strike the eggs that are in the bottom of the column, and are therefore the hottest eggs, with the idea of extracting the surplus heat from those eggs and carrying it up through the cooler eggs above the hotter ones, and thus cooling the hot eggs and warming up the cooler ones. As further features of the invention, there are provisions for admitting some fresh air to supply the required oxygen and for expelling some of the air that has been circulating, so as to get rid of carbon dioxide. So Smith, in the description previously

(Testimony of Samuel E. Fouts)

read, states the method, except that in that particular part he is not specific as to the closed circuit of air to the exact final arrangement of the eggs in different stages of incubation in the column of air, and he does not in that paragraph state the way in which he provides fresh air and gets rid of foul air nor as to the manner in which he maintains moisture.

The direction of the circuit of air in the Smith method is from the bottom of the stack or tier up through all of the superimposed trays to the top of the stack or tier, and by that it first goes through the hottest eggs at the bottom and then on up successively through the cooler eggs until it reaches what might be called the cold eggs at the top.

"Q And in the Smith method as you find it, it is necessary, is it not, to move the eggs from their original positions in the rack, in order to carry out that method, as you find it in the specification? Mr. Ely: I object to that, Your Honor. He has already answered that question and committed himself on that, that it makes no difference. * * * The Master (Interrupting): Let us take an answer to that. We can get a yes or no answer, because the question is leading enough for that. The Witness: Yes, sir."

I saw a Robbins machine in operation at the plant in Gardena last Saturday and made some experiments with that machine by remaining at the plant full three-quarters of an hour after the Master and the others had left. I first tried to ascertain whether or not there was any air passing from the eggs in one of the tilting trays, either upwardly or downwardly, to the eggs in the next adjacent

(Testimony of Samuel E. Fouts)

tray. The means I used consisted of a stick with a ribbon fastened to it manipulated through the front door, which was closed as tightly as possible to leave room for the stick. That was not very satisfactory and I could come to no definite conclusions. Then Mr. Farrar and I went inside the incubator with the tilting trays first positioned in their central or horizontal arrangement. We were prepared to make two kinds of tests and this we did. We had an anemometer and Mr. Farrar was smoking a cigar, and we intended to make one test by means of the cigar smoke. We tested as far as we could reach and wherever we could place the anemometer to ascertain whether such currents passed between the eggs in a tray in either the up or down direction and the result was that the anemometer fan did not turn at all, and if there was any air whatever passing between the various eggs in the trays it was of too little velocity to affect the anemometer and that was true everywhere that we could reach with that instrument. We had Mr. Goddard, the hatchery man, at the plant, remove a tray so that we could make more extensive experimentations in that regard and we then tested where the tray had been located with the same result as above stated. When Mr. Farrar would puff or exhale tobacco smoke over or beneath the layers of eggs in a tray, and I would watch on the other side of the layer to see if I could detect any smoke coming through the layer of eggs in the tray, I could see none whatever. My conclusion, from all of these tests, was that there is no passage, or substantially, measurable or detectable current, through any of the means that we could think of, passing between the eggs in the tilting trays, which

means that there cannot be, in those tilting trays, a transference of heat from the eggs in one tray to the eggs in another tray. The doors were closed during the time we made those tests and with the trays first in the horizontal position and then we went over the same tests, with the tilting racks turned from the opposite forward side as far as possible without striking, but we could not detect any currents with the racks in that position. We next turned the racks back in the other direction as far as possible with us in the incubator, and again repeated those tests and with the same result, namely, in no instance could we detect any indication of a current of air passing from one tray to another in the tilting racks.

We did find a current of air flowing from the front to the rear between the trays in the racks in both the horizontal and tilted positions. The strength of this rearwardly moving current seemed to vary in different parts of the machine in a rather surprising and seemingly erratic way, which I could not explain, for in some places it was a rather swift current and in other places it was very sluggish, while in still others it was hardly enough to turn the anemometer fan, but the general direction of the currents was from the front to the rear. We carried out, on the left-hand end, substantially the same experiments that Professor Daugherty testified to, and also verified his results, although I was not especially interested in that because I was concerned with finding out whether or not any air passed between the trays in the tilting racks and I found there was not.

(Testimony of Samuel E. Fouts)

RE-RE-CROSS-EXAMINATION

by Mr. Ely:

I believe the smoke tests we carried out the other day were entirely adequate to give a just and proper idea of air circulation. Mr. Farrar would exhale a dense cloud of smoke immediately below a certain tray filled with eggs, and I watched as closely as I could immediately above the same layer of eggs and I could detect no smoke coming through. Had there been a current of air through there I believe I would have seen smoke.

The eggs in the Robbins machine remain in the tilting racks 18 days, but in the Smith machine there are three days before they are put in the tilting racks, but, except for those three preliminary days, the eggs in the Smith machine remain from the third to the eighteenth day in the tilting racks, and certain eggs in the Robbins machine remain also from the third to the eighteenth day in the tilting racks. The air moving through the tilting racks in the Robbins machine goes in a parallel path between the egg trays which in the Robbins machine are separated from each other by about an inch space from the top of the eggs to the bottom of the tray above. Movement of air in parallel paths between the tilting egg trays, as in Robbins, is certainly different from the operation which Smith discloses in his specification, which I have studied and I was under the impression that every particle of air circulating in the Smith patented machine goes through every egg tray on its one complete cycle. You brought out, the other day on cross examination, that after the air gets above these flexible strips, which connect the lower ends of the tiers, it might reach into the spaces

(Testimony of Samuel E. Fouts)

between the adjacent tiers and go on up without passing through some of the trays, but if it does to that extent it is a departure from what Smith discloses. I think that, after the air gets above the upper edges of those flexible strips 28, it may pass through between the trays rather than up through the eggs. With the trays empty we would find the air travelling upwardly in a vertical direction through all of these empty trays in the stack.

The testimony here has been to the effect that in the Robbins machine and with the trays empty, the air passes through in a horizontal path, but I have not tested that out and I cannot say, although it appears reasonable that such would occur. I hardly think it would occur in exactly the same degree that it would in Smith, but probably the air would pass through the bottom of some of the trays. With the Robbins machine full of eggs the air is caused to take a different course than the one I have described because of the eggs in the trays, but whether that is the cause or not, the fact is it does pass in the layers between the trays. On my direct examination I said, and my tests the other day indicate, that with the Robbins machine full of eggs the air currents move in parallel streams, but whether that is because of the presence of the eggs or some other reason, I do not know. Nor do I know of anything else except the eggs that could account for it.

With the trays of the Smith patent structure filled with eggs, I do not think the currents will be deflected in that manner by the eggs, or, in other words, so as to cause the air to pass between the trays and on through the eggs. You will not find that result in the lower trays

(Testimony of Samuel E. Fouts)

in the tilting rack because of the presence of those flexible strips which loop up along the sides and the very function of which is stated to be to force the air up through the stacks. After reaching above the tops of those strips then the presence of eggs in the trays might deflect the air currents over in parallel paths, but I do not know, nor do I know just why it wouldn't. I am not saying it would or wouldn't because I don't know. I did not notice, and I do not know, that it is true that eggs in a single tray are set closer together in Smith than in Robbins. In this respect I have referred several times to line 89 of page 1 of the Smith patent where it says that the eggs rest in close and solid formation. I also noticed that in Robbins the eggs are spaced in a series of parallel rows by very thin metal strips, which, of course, arranges the eggs in rows and, I think, they would likewise be in Smith if the eggs were substantially the same size, but if of different sizes a sort of staggered arrangement of the eggs might result, but if of the same size then rows would result, although not set off by metallic strips. The Smith patent does not call for metallic strips to separate the series of eggs in rows, and I presume the eggs can be set in staggered formation if they were different sizes. So far as the closed and solid formation of the eggs is concerned, I would say that the Smith and Robbins patent disclosures are practically the same, but if anything the eggs may be spaced slightly farther apart in the Robbins than in Smith by reason of these metallic strips.

These strips 28, shown in Figure 3 of the Smith patent, seem to terminate at the third tray from the bottom. They seem to start right at the lower edge of that tray

(Testimony of Samuel E. Fouts)

and extend down the rest of the way, looping over to the next stack, so that apparently any compulsion of the air current through the eggs by those strips takes place only at the lowermost trays. I will read from line 28, page 2 of Smith:

"As explained later, the trays near the bottom are preferably arranged so the air is forced to pass between the eggs in each tray, thereby cooling or holding the temperature of those eggs down."

And, beginning with line 56, the patent says:

"And it will be also noted that the vertical spaces 27 between the adjacent tilting racks 10 are closed at their lower ends by flexible strips of fabric which are attached to and extend upward at each side of the rack so as to compel the air to circulate through the mesh bottom and around and about each egg, as heretofore referred to, and the eggs further advanced in incubation are contained in these lower trays as the danger is that the temperature will rise in these eggs to a point injurious to incubation. The improved method disclosed herein permits the circulating air to act as a medium to prevent the overheating at this stage of incubation. This is accomplished by promoting an induced draft within the lower trays."

The phrase "as heretofore referred to" in the above quoted passage, I understand refers back to the part which I previously quoted, beginning at line 28.

I do not know whether the mesh-bottomed character of the trays in the Robbins machine assists in the transfer

(Testimony of John L. Robbins)

of heat from one tray to another. I cannot answer the question whether or not, in the operation of the Smith method, there occur a plurality of parallel columns of air cross-connected by parallel currents of air and guided by the tilted egg trays.

JOHN L. ROBBINS

recalled on behalf of defendant.

DIRECT EXAMINATION

by Mr. Farrar:

I testified the other day in this cause. I am connected with the Robbins Incubator Company, which manufacturers the Robbins machine at Denver, Colorado, and which said machine is named after me and on which, or the principle, involved, I have a patent.

(Whereupon counsel for defendant offered in evidence as defendant's exhibit F, a copy of the Robbins patent, No. 1,728,980, dated September 24, 1929, and which said patent was accepted and received in evidence.)

(Whereupon counsel for defendant conceded that the Robbins incubator, plaintiffs Exhibit 13, inspected by the court, differs from the illustrated incubator, shown in the patent, in that the fan back of the hatching section shown in the patent is not of the same size as the one in the machine inspected and is not in the same location and had no partition between the hatching and incubating sections, as shown also in the patent.)

I am a defendant in a suit recently tried in Denver and brought by the manufacturer of the Petersime machine and in which a motion for a rehearing has been

(Testimony of John L. Robbins)

filed and a copy of which has been introduced in evidence as Exhibit 17. The machine exhibited in the Denver case was the smallest sized machine and used only one fan, and differs from the machine inspected by the court in the case at bar and the other Robbins machines referred to in the case at bar.

At no time since I have been manufacturing the Robbins machine has a charge or demand of any nature been made upon me by plaintiffs in the instant case with respect to infringement, except a letter which I received in the latter part of May.

(Whereupon the letter above referred to was marked as defendant's Exhibit G for identification)

This is the only letter or demand of any kind ever made upon me standing in any relation to the question of infringement, and before the case at bar was filed.

(Whereupon the letter above mentioned was read into the record and accepted in evidence and is as follows:

"EXECUTIVE OFFICES
"THE BUCKEYE INCUBATOR CO.
"SPRINGFIELD, OHIO.

"May 21, 1929.

"Robbins Incubator Company,
1523 Stout St.,
Denver, Colorado.

Gentlemen:

"We find that you are using a wet bulb thermometer on your incubators that infringes a number of claims which have been allowed on our application for patent

(Testimony of John L. Robbins)

covering this device. We have not had this patent issued, but we can tell you definitely that it will be issued in the near future, and we thought it would be only fair to advise you of the situation, as it would not be good business on your part to equip your machines with an infringing device.

"We trust you will understand the motive which prompts us to give you this information at this time, and beg to remain

"Yours very truly

"THE BUCKEYE INCUBATOR COMPANY,

"Geo. Cugley,

"Vice-president and Treasurer."

I put out an instruction book for users of the Robbins incubator, one of which I now produce.

(Whereupon said instruction book above referred to was marked defendant's Exhibit H for identification.)

In these instruction books I teach the method of placing fresh eggs in the incubator and emphasize that in large type letters on page 15, and which states as follows: "Placing the egg trays in incubator." That is the top line of the paragraph. "Load your incubator from the center of the shaft up and down, distributing trays over the length of the egg sections. This will balance the load and make turning of the eggs easy." In large type now: "Do not stack fresh eggs in the incubator close together. Alternate the trays—that is: Miss or skip a tier at each of the first settings, and when no more places are left to be skipped or missed, fill in the missed places with the subsequent settings."

(Testimony of John L. Robbins)

(Whereupon counsel for defendant offered in evidence as defendant's Exhibit H the instruction book above referred to and which same was received and accepted in evidence.)

I first took up the subject of artificial incubation in the year 1910 as a hobby and used several makes of incubators which were procurable at that time. I now conduct an experimental hatchery and have been making incubators about four years. I belong to the association of hatchery-men and attend their meetings and I am familiar with other types of incubators besides my own.

By stage incubation is meant the starting with a definite number of trays placed at certain positions and which later are moved downward until they reach the bottom. Of course, they need not necessarily be moved downward, so that stage incubation means the placing of eggs at different times in the incubator so that the hatches come out at different times.

(Whereupon an adjournment was taken until 2 P. M. of the same day.)

JOHN L. ROBBINS

recalled and

REDIRECT EXAMINATION

resumed by Mr. Farrar:

(Whereupon two sheets from a catalogue of the Boling Incubator Company were marked as defendant's Exhibit J for identification.)

I received the above mentioned two sheets of the Boling catalogue from the Boling Incubator Company at Browns-

(Testimony of John L. Robbins)

town, Indiana yesterday morning in response to my request. I have seen the complete catalogue of the Boling incubator, in fact have one at home, and I recognize these said two sheets and they are the exact pages from the catalogue I have heretofore seen.

Exhibit J for identification offered by defendant's counsel. Objection by plaintiffs' counsel on the ground that the exhibit was insufficiently proved, it not appearing that the exhibit correctly illustrated the Boling structure in suit. Objection sustained, with exception to defendant.

CROSS-EXAMINATION

by Mr. Ely:

I instruct operators of my incubators to stack the eggs in the turning trays so that trays of eggs of the same age are not adjacent, because I found it to be the best method of operating my machine and if trays of eggs of the same age were placed together the results would not be very satisfactory, but in which event I do not think or know that the eggs would heat up and prevent proper cooling. The instructions, in capital letters across the page of my instruction book, illustrate the arrangement from which I got the best results and the reason for such arrangement was that I got better evaporation of the moisture contents of the eggs. Placing eggs in adjacent trays of the same age does not help the evenness of the temperature.

"Q Let me state it this way: Has it been your experience that by placing the eggs in the various stages of incubation scattered throughout the tilting trays you get even temperatures?

A I get even evaporation of moisture particularly.

(Testimony of John L. Robbins)

Mr. Farrar: Answer the question, Mr. Robbins.

A Yes.

Q By Mr. Ely: The answer is yes?

A Yes."

I have obtained, within the last year, another incubator patent than the one introduced here in evidence. I built an incubator of the form shown in this second patent prior to the building of my present incubator and wherein the fans were shown at the ends of the drum, but I did not testify in the Denver case that I still got hot spots inside the drum with the fans placed in that fashion.

I operated a Buckeye incubator about ten years ago and then operated a Petersime incubator which was substantially the same as shown in the patent No. 1,562,787, and, in the operation of which said Petersime incubator, I found that there was a dead spot in the center of the drum where the air was not in motion. I conducted private experiments for my own benefit and found that did not take care of the matter and I did not get enough air through the drum with that construction and then I mounted the fans on the ends of the shaft in combination with the reel, as shown in that patent No. 1,732,280, and that worked satisfactorily. I changed to the type with the fans in the back because I found it more convenient to have that arrangement and belts and pulleys accessible from the outside. In perfecting my present type of incubator, I cannot say that I had to have a direct current introduced in, and constantly flowing through, the machine, but I thought by having the fan placed in the back I would get better circulation of air.

(Testimony of John L. Robbins)

I testified in the Denver case as follows:

"I, therefore, decided, in addition to that, not only was that an improvement, but I found that in order to introduce—to have a defined air current introduced into the machine, constantly flowing through, that I would have to have a definite method of bringing it in, and decided and made the change and put these in the back of the machine?"

The word "these" in the above passage refers to the fans, and I also testified in the Denver case that I put the fans in the back of the machine. I do not remember whether I testified that "I decided that the entire idea must be changed so that all of the eggs should receive the same efficient circulation of air driven by these fans," but if that is in a copy of my testimony, then I so testified. I believe that is the testimony as I gave it in Denver, but it represents a mere supposition on my part, and I do not know whether or not it is correct; it is just a conclusion and I may be wrong.

In testifying in the Denver case the court asked me "You claim that that throws the current of air forward, or do you claim that it just agitates it?" and I replied that "It throws the air in a definite direction forward, because we can determine that—" I merely guessed, because I am not an engineer and I could not say exactly as to how these things move the air, but I did so testify in answer to a question by the court.

"Q And then the court says, 'You don't believe in this principle of just agitating the air without any definite direction or course?' And you said 'No, sir.' Do you recall that?

(Testimony of John L. Robbins)

"A If it is there, I said it.

"Q Well, look at it.

"A. Where is that question?

"Q Right here.

"A Whether I believe it or not that wouldn't make it so.

"Q But that is the way you testified at that time?

"A Yes, sir.

"Q And you also said, when the court asked you, 'You then claim a current of air going in a definite direction?' 'Yes. sir,' did you not?

"A If it is there.

"Q Well, that is so, is it not? That is true, isn't it?

"A Yes, sir.

"Q Do you recall testifying in answer to a question by the court, 'What is the difference—'

"MR. FARRAR: If your Honor please, I have been rather averse to making objections to this, but I sincerely submit this is not cross examination.

"THE MASTER: No; I don't think it is cross examination.

"MR. FARRAR: And I object to it.

"THE MASTER: I think it is outside of the scope of the direct examination. I don't recall that there is any testimony on direct as to the—

"MR. ELY (Interrupting) This book of instructions was put in, your Honor.

"THE MASTER: The witness's testimony was only directed to one particular part of the instructions that

(Testimony of John L. Robbins)
related to the placing of the eggs in the trays and the order in which they were placed there."

I am familiar with the contents of this catalogue, plaintiffs' Exhibit No. 8. Asked if the statement therein that air is moved in gentle pulsations was true the witness said is "just mere advertising talk".

"BY MR. ELY: Why did you say in your catalog that the air was merely pulsated and not driven?

"MR. FARRAR: If your Honor please, I didn't ask this witness a question about air currents. He is not an engineer and not qualified as an engineer, and we didn't go into that with him at all.

"THE MASTER: It is not proper cross examination. The objection is sustained.

"MR. FARRAR: Then I move to strike, if your Honor please, the last question and answer.

"MR. L. S. LYON: Well, you can't move to strike something when there has been no objection.

"THE MASTER: It is too late now to go back to that."

(Whereupon counsel for plaintiffs offered in evidence, as plaintiffs' Exhibit 19, the above referred to Robbins patent No. 1,173,280, and as defendant's Exhibit 20, the Petersime patent No. 1,562,787, both of which were accepted and received in evidence.)

(Whereupon counsel for defendant stated the close of defendant's evidence.)

(Testimony of Joseph I. Taggart)

JOSEPH I. TAGGART

recalled in rebuttal.

DIRECT EXAMINATION

by Mr. Ely:

I am familiar with the egg trays used in the Robbins machine and which trays I am now shown.

(Whereupon counsel for plaintiffs offered in evidence as plaintiffs' Exhibits Nos. 21 and 22, the egg trays above referred to and which were accepted and received in evidence.)

I am also familiar with the way eggs are placed in those egg trays and I can illustrate how it is done. The point is that eggs are placed in rows and are separated by galvanized strips made of approximately 32-gage metal.

I am also familiar with the egg trays employed in the Smith incubator.

(Whereupon counsel for plaintiffs offered in evidence, as plaintiffs' Exhibit 23, the egg tray above mentioned, which was received and accepted in evidence)

In stacking eggs in the Smith tray they are staggered and interlocked. The interstices between eggs are smaller in the Smith trays than in the Robbins trays. The Smith tray is rated at 156 eggs and the Robbins at 150 eggs, and the number of square inches of egg capacity in the latter is approximately 44 square inches more than in the Robbins machine as shown. That has an effect on the relative ability of the air to pass through the trays and means that in this size tray there is 44 square inches of

(Testimony of Joseph I. Taggart)

open space more than in Smith trays. In both cases the eggs are set on end. Eggs are ideally shaped to offer little air resistance and are similar to the lines found on struts and supports in airplanes that are built to offer no air resistance.

I have studied and understand the prior art introduced by the defendant in this case. I do not know of a successful incubator with eggs placed in staged incubation wherein convection currents alone were relied upon and I know of some operated upon that principle. They failed. We have experimented with several different shapes and sizes of incubators, endeavoring to find one that would hatch successfully with convection currents, but have failed. I have been in touch with a number of other tests and have watched experiments extending over the past seven years trying to hatch eggs in staged incubation, but up to the present time none have proved successful. One specific instance is that of Charles McLain, of Fenton, Michigan, who has built three or four machines, ranging in size from 25,000 up, and none of them have proved successful. The Buckeye Incubator Company have tried for several years to perfect such a machine and even went so far as to bring an engineer here from Australia who claimed he could accomplish it, but so far all has proved unsuccessful.

The Buckeye Incubator Company has spent as much as $150,000 in one year trying to develop a plant of this type and it backed Mr. McLain to the extent of $30,000 on his experiments. The Smith Incubator Company maintains an experimental department where we are continually trying to improve our machine, or to develop other

(Testimony of Joseph I. Taggart)

types that will work more efficiently and hatch good chicks with less expensive equipment. Each year, since I have been with the Company, we have hatched from 25,000 to 200,000 eggs in an experimental way.

Some of our experiments have had to do with operating the Smith incubator without curtains, but so far we have not been able to develop a machine without curtains which would operate on less than one half the electric consumption for fans. In other words, without curtains we required at least double the amount of fan capacity. Although we had one machine that operated very successfully on about double the fan capacity.

The present Smith machine of 52,000 egg capacity carries four fans with one-half total horse power. The No. 23 Robbins machine has a one-half horse power motor and, therefore, operates with the same horse power as the Smith machine with 52,000 egg capacity, which is a little over twice the capacity of the Robbins machine. By keeping the curtains in the Smith machine we could operate more efficiently and have less money tied up in fans and with a much less current consumption.

Smith discloses a method of hatching eggs by arranging them in various stages of incubation at different levels in a closed chamber with restricted openings therein with sufficient capacity for the escape of foul air, without undue loss of moisture and within which chamber is applied a current of heated air created by means other than the variation of temperatures, and being of sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature. This method of incubation provides for a uniform hatch-

ing temperature throughout the chamber that has been equalized by an equalization of the heat contained in the hotter eggs and the cooler eggs. In the Smith method the air travels in closed cycles and is circulated and recirculated throughout the chamber. The Smith method applies with respect to the Robbins machine and operation.

I am asked whether in the Fullington patent the heat of the eggs in the incubator can have any effect on the operation of that damper or flipper which controls the fan. The specifications on page 2, commencing with line 8, state:

"An increase of heat generated by the element 23 might very easily prove detrimental to the contents of the incubator, yet before such heat could do harm in the presence of this invention the damper 25 would necessarily be buoyed up, causing a contact between the pivoted arms and a completion of the circuit through the fan, which would then be actuated to force cool air into the casing through pipe 18 and drive out the foul air through the pipe 17."

There is no means shown for raising the damper 25 other than for the heat rising from the lamp and, should the incubator become overheated by heat generated from the eggs, there would be no action whatever on the damper because the only thing that affects the damper is the current of air rising from the lamp and an increase in temperature of the incubator has no effect on raising this damper, and it is, therefore, simply a means for controlling the heat from the lamp and not the heat from the eggs in any manner. If the current of the lamp is increased and the fan started up it would cause the lamp

(Testimony of John L. Robbins)

to burn more freely and create more heat, and the lamp would never shut off, or in other words the heat would continue to rise therefrom just the same as it did before and there would be nothing to shut the fan off and once the fan is started it would never stop, but would keep on forcing the air through the machine, drying the eggs out, with no provision made for stopping it other than turning the lamp down, and I do not think it would work.

I have not found in any of the prior art the Smith method as I have defined it.

CROSS-EXAMINATION

by Mr. O'Brien:

In saying that the convection current machines were unsuccessful I meant that nobody has been able to make them hatch, or to give a reasonable percentage of hatch, for commercial operation. Convection machines give anywhere from 10 to 50 percent of successful hatch, depending upon the number of eggs in each machine. With a few eggs it would get perhaps a 50 percent hatch, but with the machine full, a 30 percent hatch would be very good with a poor quality of chicks. My preceding answer was given with the understanding that we were talking about staged incubators.

JOHN L. ROBBINS

recalled.

CROSS-EXAMINATION

by Mr. Ely:

The defendant, Waxman, in this case has continued to use the Robbins incubator since the filing of this suit.

(Testimony of John L. Robbins)

(Whereupon it was stated by counsel for the respective parties that their respective cases and defenses were closed, and the usual arrangements were specified by the Master as to the briefing of the case. Counsel for the respective parties also stipulated that the patent plate, plaintiffs' Exhibit No. 7, had been applied to the Smith machines as testified to by the witness Taggart.)

It appears that on the 1st day of August, 1930, the report of the Special Master was filed in this cause, and that thereafter MESSRS. RAYMOND IVES BLAKESLEE and KELLY L. TAULBEE, ESQS., having become solicitors and counsel of record for the defendant herein, a Motion was filed in defendant's behalf, together with a showing in support thereof, for an Order to reopen this said cause and to take further proofs herein, and more particularly concerning certain alleged prior public uses, commonly known and referred to as the Fullington use and the Lawry use, and also to refer the cause back to the Special Master, and which said Motion, after argument in open court by the solicitors and counsel for the respective parties, was granted, and an Order was made on December 3, 1930, by the HONORABLE JOHN R. HAZEL, and which said Order was entitled "Order reopening cause for taking further proofs and referring cause back to Special Master." Pursuant to that said Order, and to certain stipulations between the parties as to the procedure therefor, the depositions of a number

(Testimony of John L. Robbins)

of witnesses on behalf of both parties were taken in the cities of St. Louis, New York and Cleveland, all at the expense of the defendant herein, as provided by said Order, and which said depositions are hereinafter narrated and condensed as follows:

(All marginal page numbers hereinafter refer to the depositions taken at various places and, as followed in the briefing before the Master and upon exceptions argued before the lower court, the following key or designation will be maintained:

St. Louis depositions: "SL"
New York depositions: "NY"
Cleveland depositions: "CL"
Second St. Louis depositions: "Ruede")

APPEARANCES:

Albert L. Ely, Esq., — For the Plaintiff

William I. Aitken, Esq.,
and Kelly L. Taulbee, Esq., — For the Defendant

Counsel for defendant, upon appearance of counsel for the respective parties at St. Louis, Missouri, offered as defendant's Exhibit AA a certified copy of Judge Hazel's said Order, and as defendant's Exhibit BB the original further notice of the taking of depositions by defendant, pursuant to Judge Hazel's said Order.

(Deposition of Forest O. Sears)

FOREST O. SEARS,

of lawful age, being produced, sworn and examined on the part of the defendant, on the 8th day of December, A. D. 1930, at the city of St. Louis, State of Missouri, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 38 years old and live at Prairie Hill, Missouri, which is 180 miles from St. Louis, Missouri. I have lived there all of my life. My present occupation is insurance and real estate, in which I have been engaged for the last seventeen years. Until a year and a half ago, I was in the bank at Prairie Hill, being there altogether about 19 years. I at that time discontinued my connection with the Farmers & Merchants Bank of Prairie Hill, which is still in existence. I was assistant cashier and director of that bank, holding the directorship since about the year 1922.

In the year 1914 I was assistant cashier, and before that and since 1913 had been acting in the capacity of a clerk. It was in the last mentioned year that I was elected assistant cashier. I was married in August, 1913.

I know Roy F. Fullington, whom I have seen present in this suite of rooms this morning. He is the same Fullington who is the patentee of United States Letters Patent 1,205,445 for an Incubator Attachment. I have seen the original patent.

I have known Fullington all of my life, and he lives on the Clifton Hill Road about three and a quarter miles southeast of where I have always lived on a farm. In

(Deposition of Forest O. Sears)

1913 and 1914 Mr. Fullington did business at my bank and I don't know whether he patronized any other bank; he was a man of small means in 1913 and 1914, being just a renter and farmer at that time. At that time I myself was not interested to any extent in inventions or the promotion of inventions, but I did become so interested about the war time, I mean later than 1917 and possibly along about 1918, or the time of our entrance in the war.

During the latter part of 1913 or early part of 1914 I would see Mr. Fullington on an average of once a week. I at that time knew Mrs. Fullington, his wife. Their boy is now about 22 years old, and I knew them both before they were married. So far as I know they have always lived together and have never been separated.

Mr. Fullington talked to me about or showed me a particular invention of his in May of 1914. The reason I recollect that date is that I was starting then in the insurance business, or probably a little prior to that time, as a sub line with my other work, and I had occasions that led me to the farmers' properties for insurance and I dropped around to Mr. Fullington's place as a renter and discussed with him the proposition of insuring his personal property, what little household goods and few stock he might have had at that time, and I was at his home, and he told me to come in, that he wanted to show me something. I went in and Mr. Fullington had this incubator attachment which he had put on an Old Trusty incubator, which was set up on legs and had a capacity of probably 1[illegible] eggs. I had seen Old Trusty incubators before. Mr. Fullington was elated over his attachment

which he had put on this incubator, and I looked it over in view of my meager knowledge of inventions, and he asked me what I thought of it, and he showed it to me in the best way he could because it was then in operation. The machine was in his home at that time on the property he had rented, in one of the rooms of the house, already set up, and the machine had a setting of eggs in it at that time. He pulled out the tray of the incubator and I could see the eggs in it. The tray looked like kind of screen and had a little frame around it, the eggs being on that screen. I would say that there were a little over one hundred eggs in the machine at that time, although it was about a hundred and twenty egg capacity. I never asked Mr. Fullington how many eggs were set in it.

Mr. Fullington made the remark that the machine was automatic, that it had the heat control on it and would throw the heat. He showed me the fan part and I would now recognize that machine if it were shown to me. Mr. Fullington put these attachments on it; he said he had made an attachment for his Old Trusty incubator. As to whether or not Mr. Fullington personally did the work, or someone else did it, he had a friend of his and also a friend of mine living at Prairie Hill, one B. E. Hicken, who was running a tin shop and fixing anything anyone would want to bring to him that way. I saw Mr. Hicken cutting this tin here (indicating); I was in his shop a good deal. I am indicating this part here of the machine (indicating), and I saw him fitting and soldering these parts here (indicating). That is the fan attachment.

This meeting with Mr. Fullington occurred in May of 1914. I was married in 1913 and the meeting occurred

(Deposition of Forest O. Sears)

not quite a year thereafter. At the time I had this discussion with Mr. Fullington, he just off-handed wondered what I would think about patenting this or if it would pay. I told him it looked to me like he had a mighty nice little invention there, so far as I could see, the way he explained how it would keep the eggs at the same temperature. I told him if it was me I would go ahead and patent it; that it would not cost much money to patent it, and maybe the idea could be sold or he could manufacture it himself. He never told me how long he had been working on the idea. I saw the eggs in the incubator.

I did not sell Mr. Fullington any insurance at that time, but a little later we fixed up a policy and I have had him insured ever since. I had not sold him any insurance prior to the conversation above mentioned, nor had I solicited him prior to that date. I would say that the fire insurance policy was fixed up about thirty days after that visit in May 1914.

Counsel has pointed out a device in this room which is the same device that I saw in Mr. Fullington's home, as I stated, in May, 1914. At the time I saw it, Mr. Fullington was showing me all around the incubator without disturbing the eggs and this is the same incubator he had the eggs in at that time except that then it was mounted up on legs.

(Whereupon counsel for defendant offered for identification defendant's Exhibit CC, and which said incubator box with its various attachments was so marked by the Notary.)

"BY MR. ELY:" I want it very clear as to just what you are introducing? Just what are you introducing?

(Deposition of Forest O. Sears)

"BY MR. TAULBEE: I am introducing the main box or chamber, which comprises this incubator and each of these various parts, or elements, whether detachable or permanent.

BY MR. ELY: The only detachable thing is this thing here (indicating).

BY MR. TAULBEE: Mr. Ely is indicating what will later be referred to as a motor and fan attachment and baffle plate, providing for forced draft circulation of air through the incubator, and making a continuous circulation of air.

BY MR. ELY: I object to your conclusion on that.

BY MR. TAULBEE: Wait a minute—and which is not now permanently attached to the main box or chamber comprising this incubator, and which can be removed, and which also contains a plate with holes in the four corners thereof, providing means for attaching it permanently to said box or chamber.

BY MR. ELY: We are going to mark those other parts with tags?

BY MR. TAULBEE: We can mark them separately. And said separate member consisting of motor and fan and baffle plate attachment in one piece will be marked for identification Defendant's Exhibit DD. And at this time we also offer and ask that it be marked for identification as Defendant's Exhibit EE the removable wire mesh tray, with wooden sides, to which the witness has heretofore referred."

(Whereupon the fan, motor and baffle plate were marked for identification by the Notary as Defendant's Exhibit DD, and the wire mesh tray was marked for

(Deposition of Forest O. Sears)

identification by the Notary as Defendant's Exhibit EE. Further notice of taking of depositions was then marked by the Notary for the purpose of identification Defendant's Exhibit FF.)

The witness resumed:

To my best knowledge and belief, this incubator to which we have been referring and which we have identified as Defendant's Exhibits CC, DD and EE, was the same that I saw in May, 1914, at the home of Mr. Fullington. At that time I particularly noticed the device which protrudes from the end of the box which we have referred to as Defendant's Exhibit DD. It was then in operation. I only looked at the egg tray, so I didn't see the part of this Exhibit DD which was enclosed in the box. I also saw attached to the box this device which protrudes from the side and which counsel calls a damper and hot water heater. I also saw at that time at the front of the box the hinged door which opens and closes upwardly and downwardly.

"Q And to your best knowledge and belief, there has been no substantial changes made in this in its present condition and in the condition in which you saw it at that time?

A. No, sir, only it was on legs then."

I don't know what the legs consisted of, but there were four legs, under each corner. It was set up kind of high, but I never paid much attention to that.

Referring to Exhibit DD consisting of the motor and fan and baffle plate, and as to how that was attached to the end of the main box when I saw it, if I remember right he had a plate attachment on there—screw in here

(Deposition of Forest O. Sears)

(indicating), with three or four screws in it, larger than this device (indicating), and screwed on here (indicating) and set out by itself.

"Q By 'this' you mean Defendant's Exhibit DD was screwed onto this plate?

A This part was screwed on this plate (indicating)

Q And the plate fastened to the box?

A Yes, sir; I judge where those holes are there is where the plate was."

The device made kind of a little noise like a fan when in operation or when the fan would start to operate. As to my seeing any sort of heater or lamp of any kind connected to the box, I would say that I never looked into that, but I understood him to say this is where the heat was. The heat originates there and is diffused through the box; here is what I was mostly interested in (indicating). Offhanded, I wouldn't say how that heat was generated; I never looked at that carefully; we were discussing this little fan with the battery attachment; that is what he was showing me mostly.

While I was there the fan operated intermittently, as the heat lessened or would go on. As to what caused that fan to start and stop, I heard him say the baffle plate in there or something in there, somewhere or another, but I didn't see it. This was in operation when I was there. The eggs were in the box at the time and he never pulled any of this part out at all (indicating).

"Q So that at the time you saw it, this motor and fan and baffle plate were inserted into the box, and that was not removed while you were there?

A Fastened on.

(Deposition of Forest O. Sears)

Q Fastened on in the manner you have described?

A Yes."

I asked him how he conceived the idea for this, and he said, well, he always thought there could be something put on an incubator.

"BY MR. ELY: Object to that testimony * * * as improper; what he had in mind is not proper."

He stated he figured on an idea that this heat control, or whatever he called it at that time—that this device would kind of automatically take care of that without watching it, like the old way, and that was about the sum and substance of our conversation. We never went into detail with it.

After that time I would say that I saw Mr. Fullington about once a week and I subsequently talked to him about this device which has been identified and offered in evidence in this case. When he would come in I would ask him naturally how he was getting along with his invention, especially about the time he was preparing his papers for the patent. He told me he had decided to go on and have it patented and if I am not mistaken, he showed me the drawings when he got them back from his patent attorney, had me look at them; I went over it the way anyone would not knowing very much about it, and I would ask him from time to time how he was getting along with it. That would be about the general run of our conversation. I did not at any time return and see the incubator again; he finished up his insurance when he came over to the bank one day. He never at any time asked me to become interested in this, although I continued to see him off and on about once weekly.

(Deposition of Forest O. Sears)

As to whether or not he ever asked me to assist in the exploitation of this, or in the sale or improvement of it, I will say that a good while after this he came over one day and brought all of his papers and just wondered if I knew of anyone that might become interested in this or had some capital, and offhanded I told him no, I didn't know of a soul, but to leave the papers there and in a casual way I would mention it to somebody and you never know what the outcome will be. I remember that on two different occasions he brought the papers in. The last time was not over three years ago at the outside. I kept the papers there about six months.

As to whether I made any effort to get anyone financially interested, I told some friends I knew who were selling hardware, if they knew of anyone through their hardware channels, to get in touch with me. I showed a fellow—I forget who he was—a drawing and told him, "I don't know whether anybody will become interested, but I will just show it to you while you are here." I don't know whether any of these people I mentioned it to actually took it up; they did not through me, although I did make actual efforts to exploit the Fullington incubator.

I afterwards returned these papers to Mr. Fullington. The first discussion occurred maybe seven or eight years ago and I know at that time the papers stayed there about a year. He told me to file them there so they wouldn't burn, in the vault, and I filed them in an envelope for him.

I don't know what Mr. Fullington's financial condition was the first time I had the conversation with him in 1914, but naturally it would be very limited because he

(Deposition of Forest O. Sears)

was just getting started in renting the place, and if I remember right he had a little capital borrowed from the bank and had no balance.

"Q Do you know whether or not there had been any change in his financial condition when he later took this up with you on two later occasions?

BY MR. ELY: Object to that.

BY MR. TAULBEE: We will connect it up.

A Naturally, he accumulated a little by saving and staying close to home, and not spending much money, but he never accumulated much."

By "much" I mean much of this world's resources. I stated that I became associated with Mr. Hicken about the time the war started, but I forget the exact date, but it was somewhere in that neighborhood. Mr. Hicken invented a soldering iron and blow torch or cutting torch for cutting steel, and I was in his shop while he was perfecting that arrangement and he was showing it to me thoroughly. As I said before, I went to his shop frequently. He is quite a master in anything like that and he kind of intimated, I believe, we could put the soldering iron on the market and make a success of it. Later on—I forget how long it was—I did become identified with Mr. Hicken and we called it the B. E. Hicken Manufacturing Company. I borrowed one thousand dollars to start in with him. My financial condition at that time was extremely limited. Mr. Hicken did not contribute any capital; he put in his patents and his invention, which I paid for going through the patent office.

As to whether or not I ever talked with Mr. Hicken about going together and exploiting the Fullington inven-

(Deposition of Forest O. Sears)

tion, I would say that we mentioned it one time in talking; I wouldn't say the dates, but we mentioned it one time in connection with ours; he had done the cutting of this tin and getting it ready for Mr. Fullington (indicating).

"BY MR. TAULBEE: Witness is referring to Exhibit DD."

He said, "It looks like may be that could be worked out;" not knowing anything about the manufacturing game, I relied entirely on Mr. Hicken's knowledge of it. Nothing came of that talk. We finally decided we would do well to take care of our own manufacturing, and if we went to branching out we would spend what capital we had in getting the dies and stuff ready. I was extremely limited in capital at that time. I did not at any time discuss the matter of exploiting the Fullington incubator with the bank's board of directors. There were only two or three of us in the manufacturing company and we kind of discussed it. We never incorporated, and it was a partnership consisting of my father, Charles L. Sears, who lives in Moberly, and S. D. Snyder, who lives in Prairie Hill, Missouri, Mr. Hicken and myself. One night we were talking over the running of our business and talking over some other stuff we had in mind; for instance, he invented an aluminum solde that you could weld—solder and patch holes in all kinds of aluminum buckets. We then mentioned about this patent (Exhibit DD), the Fullington structure. We discussed it a little while and said it might be that this could be marketed on a larger scale. We also talked about starting on a small incubator and enlarging this as we would go along. I would naturally think that for an incubator in

(Deposition of Forest O. Sears)

a big place, maybe two or three thousand egg capacity incubator, you would have to have everything enlarged pertaining to the incubator; I mean put on a larger scale.

"BY MR. ELY: Object to that answer; it has nothing to do with the inquiry here pursued."

As to what my opinion was at that time as to the Fullington incubator being successful in operation, I know what Mr. Fullington told me.

"Q Was your sole reason for not developing and exploiting or financing this proposition that Mr. Fullington discussed with you, and which you later discussed with Mr. Hicken and these two other gentlemen—was your sole reason for not going into it a financial one?

A Yes, sir.

BY MR. ELY: Object to that as leading."

The fact of the business is, he didn't have the money to pay for his patent; he told me he would have to borrow that.

I don't know Mr. Waxham, the defendant in this case, and I have no interest of any kind in the outcome of the case. I don't know Mr. Robbins, who manufactured the incubator that Mr. Waxham is using.

CROSS EXAMINATION

BY MR. ELY:

"Q Mr. Sears, you are willing to testify, are you, that this exhibit, this composite exhibit CC, DD and EE is in the same condition that it was at the time that you saw it on Mr. Fullington's farm?

A That is, this, this and all of this (indicating)?

Q Yes.

A Well, yes, I would say it was.

(Deposition of Forest O. Sears)

Q Except that this part, DD, was permanently attached—

A To a plate fastened here (indicating); this didn't fit up real tight, on account of the plate being here; I don't know just how thick that was, but I know there was a plate around there."

That was just a plate and it is now missing.

The fan motor ran intermittently while I was there. I don't remember how many times it started up and stopped while I was there, although I do know it actually did work while I was there. As to how long the fan part operated, I would say that during the conversation we would be talking about this thing here, this thing he had made; I don't know whether I could tell you; I could hear it turn off and go on, start up. As to what I understood controlled that, whether it went on or went off, I would say it was kind of through the baffle plate. I asked him "What causes all of that?" He said, "It is a certain heat element; when it needs more warmth, it will throw on or shut off, and needs cooling down, the fan will start to work." I would naturally think that when the inside of the incubator got to a certain temperature, that would start the fan up. That is what I understood Fullington's description of the operation to be. When the fan started up, the air was forced through one pipe and came around and came out here (indicating). I mean, came out of this vertical pipe that counsel has his hand on and which discharges into the air.

"BY MR. TAULBEE: Counsel is referring to the vertical pipe which protrudes from Exhibit DD.

(Deposition of Forest O. Sears)

BY THE WITNESS: You understand, this wasn't out (indicating)?

BY MR. ELY: I understand; assuming this is rigid here, attached to the plate, when the fan started up, as Mr. Fullington described the construction to you, the fan blew the air in, and it circulated through the pipe and then came out of this vertical pipe?

A Yes.

Q And discharged into the room?

A Yes, sir."

Q Now, this jacket, this hot water jacket; that isn't the same hot water jacket that was on the machine when you saw it, is it?

A Well,—

Q It looks new to me; what do you have to say as to that?

A I am like you, that looks new; this part was on it (indicating)

Q This was over the lamp chimney, was it?

A Yes, sir."

There was a lamp underneath there. If I understood it right, that flipper automatically kind of raises and lowers by the heat. The fact of the business is, I didn't discuss this as much as we did this cooling process, but this, I would say, was the original attachment on here (indicating) and this might have been put on new (indicating) and used for something afterwards. I think this flipper raised and lowered over the top of the lamp. I can't tell you if that had something to do with the starting or stopping of the fan. All I know is it automatically held the heat, controlled it, like a thermostat.

(Deposition of Forest O. Sears)

I don't know how far along those eggs were in the tray at the time I looked at it. He said nothing to me about whether they had just been put in or were ready to hatch. I never asked him and he didn't tell me. He said he had filled the incubator and started it up; I would judge they had been all set at one time, in one batch. He told me nothing to the contrary.

The fan got the power from a little dry cell—I would say a telephone battery; that would be what we call a telephone battery that stood up about this high (indicating), small round battery in a square box, about six inches high and two or three inches across; a round battery with two connections on top for the wires to make the circuit; I forget now how many there was hooked up to it, but there was as many as three, I guess, or maybe four, hooked on to it; I didn't pay much attention to that. He told me it would run from a dry cell battery. I didn't know how the thing worked except what Fullington told me. I didn't examine the inside of the incubator at all; he just merely pulled the tray enough for me to look in, then he shut it up, because it was in the hatching process.

I don't know how that lamp worked; I never paid so much attention to that; he showed me this thing; I don't remember anything much about this here (indicating); the only thing that kept me enthused a little bit was that fan in there, that fanned the cold air, and which was blowing the cold air in and blowing the hot air out. I never saw any chickens hatched in this incubator and I never saw more than one operation. I was there only that one time when he was operating this.

I saw the drawings of the Fullington patent application before it was filed. That was a good little while ago.

(Deposition of Forest O. Sears)

I never put any money in this Fullington device. I never advised anybody else to put any money in it except, as I said before, I talked to one or two of my friends who dropped in, that he had the device, and if they knew of anyone that might be interested to have them come over that way and we would talk it over with Fullington.

As to whether or not I was enough enthused about it to put any money in it myself, I would say I didn't have it at that time, although I borrowed one thousand dollars to put in this other proposition, but I never put any money in the Fullington proposition. My father was like me; he didn't have any money. Three of us put one thousand dollars into this other, that is all. That was all of the original capital that went into it. There was none of us able to do that, but we took a gambler's chance. I didn't take a gambler's chance on the Fullington proposition; we didn't discuss it until later on. When I did discuss it, I didn't put any money in it; we had been staying closer to shore; being small fish, we figured there was a lot of incubators on the market, more so than what we was making. I wouldn't say that I figured it would not be a good proposition to put any money in this Fullington proposition. We didn't put any money in it, nor did any of my friends put any money in it.

There was one tray of eggs in that incubator; that is all he showed me. I would judge that one tray was all there was in it.

I am positive that I saw this device some time in the month of May, 1914 and I never went back over there afterwards. He was telling me about it from time to time.

(Deposition of Forest O. Sears)

REDIRECT EXAMINATION

BY MR. TAULBEE.

Referring again to the water jacket on the side of the box, this here shiny part (indicating) looks new to me. As far as I can tell, it is the same as was on the incubator at the time I saw it at Fullington's house in May, 1914. I see no difference in it except that new part there which looks the same as the other. I know I looked at that little place there; that is the same, I know.

When I referred to a cooling device and pointed to Exhibit DD, I meant Exhibit DD that is protruding from the end there.

I testified there was a number of dry cell batteries which were attached to that.

Referring to my testimony as to the drawings of the Fullington patent, I don't know whether those drawings embodied this device or what they were on, or whether they were the same as this device.

The other invention which the other gentleman had and I became interested in was before Fullington took up with me the possible financing of his invention. In other words, I became interested in the other invention first and I expended all of my money on it or borrowed money for that purpose, and the others borrowed money also. Fullington never asked me to become interested financially; he wanted to know if I could find somebody to get it started and I told him I would be glad to help him if I could find somebody. I talked to Mr. Hicken. He had helped Fullington.

"Q It wasn't due to lack of confidence in the Fullington incubator that you didn't invest your money?

(Deposition of Forest O. Sears)

BY MR. ELY: Object to that as leading.

A No, sir."

Mr. Hicken did not raise any objection with me as to the success of this device, but said as far as he could see, it looked like it would work good on an incubator. We decided we wouldn't go into any more than we had at that time because of financial reasons solely.

FURTHER CROSS EXAMINATION

BY MR. ELY.

I became interested in the soldering iron invention after I saw the Fullington device, and I discussed this matter of investing in the Fullington device with Mr. Hicken after May, 1914—quite a few years after that. I invested in the soldering iron invention quite a few years after I saw the Fullington device. I have no money now in the Fullington device.

REDIRECT EXAMINATION

BY MR. TAULBEE.

Fullington approached me for the exploitation of his invention after I had gone into the manufacturing business. In other words, I went into the manufacturing business to exploit this soldering invention before Fullington asked me to exploit his invention. By "manufacturing business" I mean the making of soldering irons. The business was not on a big scale. We had one stenographer and five men in a little factory we built, and Mr. Hicken himself made six. About six were employed.

FURTHER CROSS EXAMINATION

BY MR. ELY.

I became interested in this soldering iron invention somewhere along about war time—somewhere right in

(Deposition of Roy F. Fullington)

1917 or 1918, or the first part of 1919, I would say. Fullington deposited these papers in my office after the patent issued—as I said a minute ago, it was probably six years ago, or seven, the first time he deposited them in the vault, brought them over for me to see them and wondered if I knew of anybody that might be interested in it. Fullington and I never did discuss my going in with him, just merely wanted to know if I knew of anyone that might be interested.

(Whereupon counsel for defendant offered in evidence all of the Exhibits heretofore identified and which had not been offered in evidence.)

ROY F. FULLINGTON,

of lawful age, being produced, sworn and examined on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE.

I was born in 1887 and live a few miles from Clifton Hill, Missouri, where I have lived since 1909, and where I own 160 acres of land on which I still owe money. I am the same Roy F. Fullington who is the patentee of United States Letters Patent No. 1,245,445, for an incubator attachment. My incubating experience began in 1913 at my mother's home. She lives a quarter of a mile from me.

In the fall of 1913 I had in mind to put a circulator on an incubator to keep the temperature down so that when we got ready to leave home we would not be uneasy about cooking the eggs. By circulator I mean a device in order to circulate the air. I began work on this machine,

(Deposition of Roy F. Fullington)

Exhibit DD, in February or March of 1914. The device, Exhibit DD, consists of a fan, motor, fan box and baffle plate. Power for the motor was furnished from dry cell batteries. I first obtained the motor and then went over to Mr. Hicken's and he helped me to assemble the device. Mr. Hicken and I first made a fan box. We then made the fan and fastened it to the motor, next came the baffle plate and soldering the fan box that holds the motor and then fastened it to the baffle plate. We then made the vertical pipe exhaust which carries the foul air out. Mr. Hicken then lived at Prairie Hill and had a tin and blacksmith shop. Mr. Hicken made the ignition points which cut the circulation off when the air gets down to its normal stage. The various parts are made of heavy sheet iron and tin. I had the idea for the invention and Mr. Hicken had the tools and material and carried out my idea under my instructions. Drawings were made before applying for the patent, but not before Mr. Hicken and I made the device. I paid Mr. Hicken for the work done. At that time I intended to apply for Letters Patent on my invention. After the device, Exhibit DD, was completed I attached it to an old Trusty incubator, purchased from Mr. Warren Cooper in Prairie Hill. The baffle plate of the device, Exhibit DD, was inserted through a hole in the end of the incubator box and fastened on by a plate in front of the fan housing by means of screws.

The old Trusty to which I attached the fan device, Exhibit DD, was the first incubator I had on my place, and immediately after said attachment was made I attached it to six batteries and started the motor to see how it would operate. The incubator, without the said

(Deposition of Roy F. Fullington)

attachment, consisted of a wafer, oil lamp, hot water heating system, the egg tray and a thermometer. Here is the actual lamp I used on the device.

(Whereupon counsel for defendant introduced as defendant's Exhibit GG the said lamp referred to and which was then received and accepted in evidence.)

That is an ordinary kerosene lamp and the actual one I used. It goes right on the water system, right under the boiler. The boiler consists of copper and tin. The copper part is the part that contains the water. Nothing at all is put in the tin part, only this baffles the heat and throws it back over the copper pipes, the heating system. This device on top is the damper. It raises and lowers and is controlled by the wafer, which is located inside of the incubator. The wafer came with the incubator and is a regular thermostat wafer and controls the damper and the fan DD. When the wafer is set to a certain point, the fan will start in motion and the damper will raise. When the heat is lowered, it drops the damper and contacts the electric points and the fan stops.

The purpose of using that fan (which is part of Exhibit DD) is to keep the incubator from getting too warm. The fan circulates the air and obtains the air from out of the room where the incubator stands and drives it through the incubator and back out of DD, and drives the foul air out. The fan sucks the air from the room and drives that air through the baffle plate. When the fan starts rotating, it draws the air in from the room that the incubator is in.

"Q You are indicating this horizontal outlet from the fan box (indicating)

(Deposition of Roy F. Fullington)

A From the fan box, fastened to DD, and drives it to the far end of the horizontal—"

It drives it through the pipe or baffle plate. That is a closed pipe until it gets to the far end of DD, then it comes in an outlet, or a circle on the baffle plate, DD, and drives it back through the pipe back in the room, through that vertical pipe. When the air is sucked in from the room by means of the fan, the air goes through this closed pipe until it gets to the end of the baffle plate. That pipe is open. I judge there is an inch clearance there between the end of the baffle plate and the end of the pipe. Then the air returns back into the baffle plate, on the other side of the baffle plate DD, which is not a pipe, but it comes out of the horizontal—the other side of the baffle plate is not enclosed except on the side and on the top. The inside side is not closed. When the air has passed through the pipe to the end of the baffle plate, after that there is no pipe that carries the air out, none whatever. The bottom of this baffle plate has quite a number of holes in it. The object of that, the hot air comes up from inside the incubator, and this drives the cool air out (indicating). DD drives the cool air out. As this cool air is sucked in by the fan and goes through the pipe to the end of the baffle plate, all of the cool air is distributed through the incubator—distributed through all points of the incubator so that this air can go over the sides of the baffle plate and goes through it. The hot air rises up and some of it comes back through the holes. We know hot air goes up and it comes up through those holes. This circuit of air you have started will carry this hot air out through the baffle plate and out through that vertical opening. In my

(Deposition of Roy F. Fullington)

mind this hot air is the same as foul air that rises to the top. This circulation is maintained only when the fan is working and the wafer controls the fan, the wafer being inside of the box. As to what causes the heat inside the box to get to the point to function this wafer. I would say that the lamp heats the hot water system and it is the hot water. The purpose of that hot water is to heat the air in the inside of the incubator. The danger of overheating the inside of the box in relation to the eggs is that the eggs would be ruined. It will kill the germ in the chicken; in other words, cook the eggs and kill the germ. I understand that eggs have absolutely to breathe. If you grease an egg, it will not hatch; it stops the pores up. The eggs have to have circulation and oxygen and they emit carbon dioxide. I have a provision, and there is still a provision in this device for moisture. You put moisture in a saucer right under the eggs, which are in a tray consisting of a wooden frame and of which the bottom is screen wire.

This is the egg tray I actually used in the operation of this device in 1914 (indicating). I used a thermometer in conjunction with this. You can lay them on top; we usually run them on the eggs or hung up over the eggs. This is the thermometer I actually used.

(Whereupon counsel offered in evidence and had marked for identification as Defendant's Exhibit HH the thermometer referred to by deponent and which was so marked by the Notary for the purpose of identification.)

The egg tray is used in the box in a horizontal position. A couple of strips or cleats hold it in position, and it is about two inches from the bottom of Exhibit CC. One

(Deposition of Roy F. Fullington)

cleat is on each side of the tray. There are four cleats, two on the bottom and two on the top, making four altogether in this box. I made no provision for other trays, just one tray. The box normally holds one tray. I never tried to insert two. There would not be room for two on account of the wafer taking up room. If the wafer was not there, you could use other trays. They would be one over the other in tiers.

"BY MR. ELY: If the wafer wasn't there, it wouldn't work, would it?

BY MR. TAULBEE: That is debatable."

Normally this tray will hold one hundred and twenty eggs, Leghorn eggs or medium eggs.

It was necessary during the operation of this device loaded with eggs to move the eggs. I turned the eggs every day by hand. They were laying on their sides in this tray, the bottom of which is mesh wire. A solid tin or wood bottom tray would not work and would tend to prevent incubation. That is due to circulation, that will not let the air come up through the eggs. My principal idea in using Exhibit DD was to keep the heat down past normal so it wouldn't cook the eggs and would put a recirculation of air through the incubator.

I made actual tests with the thermometer as to temperature. I put a thermometer on each side. I don't know what became of the other thermometer—probably we borrowed it from my mother.

This whole device has been shipped around some and is substantially in the same condition now as it was when I used it in 1914, only it was mashed up; I don't think it would run now. I have no batteries here. It will not

run because it is mashed in. It did run at that time and I actually operated it.

After I completed this device, I set the incubator. The best of my recollection, I made the first setting at home in May and June, 1914. I had it at my home on a farm, in the room where we lived. It was not concealed. It was in that room and was out in the open. As well as I can remember, I put in the first setting between one hundred and twelve and one hundred and twenty eggs according to their size, then I started the device in operation. We had a real result from that first setting. We got ninety per cent hatch. They were good healthy chicks. I made subsequent setting just as quick as those eggs got off. I made two subsequent hatches just as soon as those eggs got off. It takes a chicken egg three weeks to hatch. I immediately set another tray of eggs and made the second operation in the same way. The result of the second setting was good. I don't remember exactly the number of chicks that came, but it was about ninety per cent hatch. I don't know exactly how many eggs composed the second setting, but I would say approximately around one hundred and twelve to one hundred and twenty. We got ninety per cent hatch. By "we" I mean me and my wife. She was helping me in the operation of this and was there all of the time. Her name is Golden. I have been married since December 15, 1907, and my wife and I have always lived together. I made a third hatch about the latter part of June. It takes three weeks for an egg to hatch and that would be nine weeks. I carried on that third hatching in the same way as these other two. From one hundred and twelve to one hundred

(Deposition of Roy F. Fullington)

and twenty eggs composed the third setting. The result from that was good. I mean by "good" ninety per cent.

In my opinion, to secure a successful hatching of eggs, it is necessary to maintain a temperature of one hundred and three to one hundred and four degrees and to keep that as uniform as possible in the last of the hatch—in the latter part of the hatching.

During these three hatchings, I made tests to discover whether or not I was getting that uniform temperature. I put this incubator in a warm room and turned the lamp up as high as I could get it and I regulated the wafer with these ignition points to test the incubator out, using the thermometer. I obtained one hundred and three to one hundred and four degrees temperature. During the process of incubation covering these three hatches, I placed the thermometer on the eggs in different places. I did not cover the entire area of the box CC. I placed the thermometer on the egg tray at any point, or in front, where I could get at it handy. I placed it here and here (indicating). In Exhibit EE, we placed it in different places that were covered with eggs. In other words, I placed the thermometer in different places over the eggs. I cannot say just how many different places. In placing it in those positions, I found I could hold the temperature at any point I wanted to and the temperature was the same in those different places.

"Q What do you attribute that to?

A From three to four degrees.

Q How do you figure that you arrived at that uniform temperature over the entire tray; what caused that?

A The fan on DD."

(Deposition of Roy F. Fullington)

The fan circulated in the incubator and drove the hot, foul air out, bringing the cool air in. Necessarily the hot and cold air would mix to some extent.

During that hatching process, when I used this incubator I have been talking about, there were evidences of circulation of air below the egg tray. You could open the incubator when the fan was in rotation, and when the chickens would hatch, the down on the little chickens, you could see that in circulation up above the eggs. It would get above the eggs by means of the current of air and would come up around through the baffle plate DD. After going through the baffle plate, the air went out DD through the horizontal part there. I am referring to the vertical pipe. I mean that the foul hot air goes out there. In my opinion, the circulation in the incubator from the fan (going through the baffle plate) caused the down from the chicks to get into the air above the chicks.

"Q Then all of the air didn't go out of the vertical column?

BY MR. ELY: Object to that form of examination—leading questions.

A No, sir."

Some of the air that was taken in by the fan was distributed through the incubator, through the baffle plate. It could get over the top of the baffle plate and go down through the holes. Some of the air went through and around the eggs maintaining circulation, and that is what kept the temperature uniform. I know that actually occurred because when I put this device to work, it would hold the temperature—maintain a uniform temperature. I had the down from the chicks circulating above.

(Deposition of Roy F. Fullington)

The baffle plate, which consists of a pipe and open apertures running along the other side of it, is probably two and a half inches broad. The box is probably eighteen to twenty inches broad, and the baffle plate goes through the center of that box. There is probably half an inch or an inch space between the baffle plate and the top of the box. I would like to re-state that. It is about that far from the hot water system (indicating), about half an inch from the hot water system, but it is probably three inches from the top of CC, the box.

Considerable of that cold air after going through the pipe and the baffle plate would distribute through the incubator. It would distribute through the baffle plate and some would go up over the sides. There was plenty of room for that. My purpose in leaving the side of the baffle plate open which is next to the pipe, and also in curling that side of the baffle plate, but not leaving it open, was to drive the air out of the opposite end of DD, from the fan motor, and it returned back so that this oval pipe would throw the air and distribute it to all parts of the incubator. By leaving this side of the baffle plate open, and in curling it in that way, my object was to distribute the air through the incubator, and that is what actually occurred and caused the air to rotate.

"Q Was there or was there not any spaces left between the edges of the egg tray when in position in the box and the sides of the box?

* * * *

BY MR. ELY: I call attention to the fact that the exhibit speaks for itself.

A There would have to be enough space for it to slide.

(Deposition of Roy F. Fullington)

Q How much space is that?

BY MR. ELY: I call attention again to the fact that the exhibit speaks for itself.

BY MR. TAULBEE: He can tell us—

BY MR. ELY: The exhibit is there.

A I suggest a quarter of an inch on each side; that would make half an inch.

Q For the air to get below the egg tray, what would be necessary?

A It goes through the screen.

Q And between the eggs?

A Yes, sir.

Q Did that actually happen?

A Yes, sir."

When we saw the dust from the chickens, or the down from the chickens, and saw that disturbed, we knew that the air would come up or was coming up from the bottom below the egg tray, through the wire mesh and between the eggs and around the eggs.

There are vents in this box, or closed chamber, CC.

"Q Where are they?

A At the damper that comes from the outside—from the inside to the outside of CC."

That vent or opening is an inch and a half by three-eighths. The purpose of providing that opening or vent was to cause a circulation and it was in the box when I bought it. I heated the air with the oil lamp which heats the hot water system; that is in the incubator CC and was a part of it when I bought it. That is a standard system of heating, standard for Old Trusty, Clay Center, Nebraska.

(Deposition of Roy F. Fullington)

Besides my wife, Mr. Forrest O. Sears, who has testified here today, watched the first batch of eggs incubating. His purpose in being there was to sell me some insurance. Mr. Sears was an officer of the Merchants bank at Prairie Hill. Mr. Sears and I discussed whether or not my invention was worth patenting. When he saw the incubator in operation he seemed interested in it and I explained to him its operation. I also explained to him about the circulation system and showed him the eggs in the tray.

L. B. Bowen, a farmer living near my place, saw the incubator in operation during the first hatch. It is customary for people residing in the country to visit one another regularly. I showed Mr. Bowen the incubator but did not go into as detailed explanation as I did with Mr. Sears. None had been hatched at that time.

Mr. William Epperly, a neighbor of mine, also saw the incubator in operation. Other neighbors also saw it as it was kept in open view in my home. Two of those neighbors are a Mr. Southern and a Mr. Egan.

All of the matters previously testified to happened in 1914. After the patent issued I paid some money to a publishing company for advertising. My patent drawings differ in various details, from the incubator which I constructed in 1914. I have here the four legs which originally came attached to that incubator.

(Whereupon counsel for defendant introduced as defendant's Exhibit II, the four metal legs above referred to, and which were so marked for the purposes of identification.)

(Deposition of Roy F. Fullington)

I used dry cell batteries with my incubator because my home was not wired for electricity. They were real expensive and I could not afford to buy many. After the third hatch was completed I used the incubator, but I discontinued the use of the attachment, Exhibit DD, because the motor consumed my batteries and it became too expensive to operate. The batteries did not last very long and I had no money to replace them. About two or three weeks after the third hatching, I took the fan and baffle plate off. I wanted to use the incubator with the fan attachment and would have had my home been wired for electricity. The incubator and attachment were in my possession between the years 1914 and 1930, except for a time when it was shipped from point to point in an effort to sell it. It was thereafter shipped to Los Angeles for the purposes of this case and remained there. I once shipped it to an incubator company in Illinois and had difficulty in getting it back and was helped out by a former major in the army, one Joe Frazier. That was between the years 1916 and 1917 after it was patented. Before that I had written to several incubator companies proposing to sell my invention.

It was a surprise to me when I learned that the patent did not follow the device I had constructed and used in 1914. The hot water jacket is new but one identically like it was used in 1914. Rust destroyed the old one.

I had various talks with Mr. Sears about my invention and patent after his visit to my home when he saw the incubator in operation. I later talked to him about finding some way of disposing of it for me and whether or not he could get anyone financially interested in the pat-

(Deposition of Roy F. Fullington)

ent. With that in mind I left my patent papers with Mr. Sears at the Bank so that he could show it to anyone who wanted to see the patent. I had no money whatever at that time with which to promote the invention. I borrowed part of the money for my patent attorney from my mother and did not repay her until two months ago. I was in debt and still am and have borrowed money from Mr. Sear's Bank. I met Mr. Robbins, who manufactured the Waxman incubator, on November 12th or 14th, 1930 when I went to Los Angeles expecting to testify in this case. I have no interest whatever in the outcome of this suit. This incubator, which was shipped out there and about which I have been talking, is referred to in my affidavit as Exhibit A filed in this case.

(Whereupon counsel for defendant again offered in evidence all Exhibits referred to and identified by the preceding witness, all of which were accepted and received in evidence)

CROSS EXAMINATION

BY MR. ELY.

When I sold my patent to the Jamesway Manufacturing Company, two or three months ago, I had no understanding with the company that I would testify in any litigation about incubators, and that came afterwards. My negotiations were carried on with Mr. O. O. Groves, of Kansas City, who said, after the sale had been consumated, and on the same day, that he would probably want me to testify some day. The incubator attachment, Exhibit DD, was bought by, and belongs to, the Jamesway Manufacturing Company. I talked to Mr. Jandeburr before I sold the patent. I made an affidavit

(Deposition of Roy F. Fullington)

in Los Angeles on the 18th day of October, 1930, relative to this cause, first stopping off at Denver, where I met Mr. Robbins, who accompanied me on the rest of the trip. I had never seen him before that and had never talked to Mrs. Robbins.

When I operated this incubator, in 1914, all of the eggs were set at one time for each of the different hatches, and I never operated the incubator with more than one tray of eggs in it and I never represented to anyone othewise. Mr. Jandeburr was at my house before Mr. Taggart visited me in September. I never told anyone that I ever operated my incubator with spaced tiers or layers of eggs one above another, with eggs in different stages of incubation. "I never told anybody that I ever operated this incubator with eggs of different ages at a time; one setting at a time, although I told Mrs. Robbins and Mr. Jandeburr that I could do such a thing." When Sara Eber Robbins made an affidavit on August 26th, 1930, stating that I had operated my incubator with spaced tiers or layers of eggs one above the other in different stages of incubation, she was mistaken. Of course, by making this incubator box, Exhibit CC, deeper I can put another cleat in the bottom and use tiers of eggs, but I never constructed and operated an incubator with that additional tray. All my eggs were set at one time, single tray.

My idea was to make an attachment so that when the temperature in the incubator got beyond a certain point a fan would start up and blow fresh air into the incubator and the foul air out, the fan to be controlled by a thermostat, which would recirculate the air through the incubator. The fan is located outside the incubator,

(Deposition of Roy F. Fullington)

and delivers a certain amount of air to the incubator, and the same amount of air goes out of the incubator and the fan runs intermittently. My incubator, comprising Exhibits CC and DD, was operated in a room with the temperature from 70° to 80°. When this fan runs it recirculated the air in the incubator by driving the air out into the room and then returning it back into the incubator so as to keep up a circulation of a portion of the air that comes out of the incubator. I have heard about recirculation all my life, for when I went to school I learned that the blood recirculated through the body. When the incubator cools down the fan stops. The dry cells would probably run the fan continuously for twenty-four hours before becoming exhausted. The fan would not run that twenty-four hours all the time. It would take two sets of dry cells to run the fan through one incubation. Towards the last it wouldn't have force enough to drive the air through. The eggs are hottest toward the last of the incubating.

"Q During that time the fan would not have force enough to drive the air in the incubator?

"A It had force enough if you had good batteries.

"Q But you didn't have good batteries.

"A I would, if I would buy them.

"Q But you didn't.

"A I didn't buy them, only when I set the first three times."

I used at least six sets of four batteries for the three incubations.

When I refer to recirculation of air I mean air taken out of the room, put through the incubator and then discharged into the room again and then picked up again

(Deposition of Roy F. Fullington)

from the room and returned to the incubator. My mother still uses a Trusty incubator and I have none of any kind at my own place, except this Exhibit CC on which I have not used the fan attachment since 1914. I never made an incubator attachment just like my patent, which was applied for September 18, 1914, and for which I made the drawings myself. My patent shows a different device from that which I already had made. There is not room enough in the incubator to place another layer of eggs on top. A top layer, if I tried to put it in, would be too close to the hot water pan and too close to the baffle plate DD and the wafer would interfere. This is a wafer which I hold in my hands.

(Whereupon counsel for defendant introduced in evidence as defendant's Exhibit JJ, the said wafer attachment referred to and which was so marked by the reporter.)

One of the stated objects of the patent is to do away with the thermostat with this inexpensive wafer device.

"BY MR. ELY: In that exhibit you have before you, the lamp was outside of the incubator, was it not?

"A Yes, sir, on CC, on the outside.

"Q With that device there, you couldn't put the lamp inside the incubator, could you?

"A No, sir.

"Q Will the incubator shown in your patent 1205445 work?

"A Not with the lamp inside of it.

"Q Will it work with the lamp outside?

"A Not without JJ.

"Q Not without the thermostat?

(Deposition of Roy F. Fullington)

"A No, sir.

"Q Yet the patent says one of the objects of the invention is to do away with the thermostat?

"A Yes, sir.

"BY MR. TAULBEE: Object to any evidence about the patent; it speaks for itself."

REDIRECT EXAMINATION

BY MR. TAULBEE:

I am handed a device which includes a motor and a fan, fan box, pipe and baffle plate, which was made in August, 1930. BY MR. TAULBEE: "The said device was shipped, together with the incubator, to Los Angeles, and referred to in the Fullington affidavit as 'Exhibit A,' in two parts, although it was never unpacked and used in this case." The witness: "I had it made at Moberly, Missouri, and its purpose is to recirculate the air and to take the place of the old Exhibit DD, and it will work off of a light socket and the incubator made to operate thereby."

(Whereupon counsel for defendant introduced said last referred to device as defendant's Exhibit KK and it was so marked by the reporter. Objection by plaintiff as having no bearing on the case.)

Exhibit KK differs from Exhibit DD mainly in size, and otherwise is substantially the same.

(Whereupon counsel for defendant introduced in evidence, as defendant's Exhibit LL, and which was so

marked by the reporter, the thermometer which Mr. Fullington used in the operation of his incubator in 1914.)

I have never made a drawing or blue print of my invention and the patent drawings were not made by me, and I thought that my patent and the drawings would illustrate the device which I hade made and used in 1914.

RE-CROSS EXAMINATION

BY MR. ELY:

Mr. Jandeburr told me to build this Exhibit KK, which he said he wanted to take the place of Exhibit DD, which I did not then have in my possession. The Jamesway Company had it. I told Mr. Jandeburr that I had loaned Exhibit DD to a Mr. O. O. Grooves. The reason for having Exhibit KK built was to take the place of the missing Exhibit DD and enable Mr. Jandeburr to see its operation. While Exhibit KK answers the same purpose as Exhibit DD, it somewhat differs, namely in the features that it has more holes through it, has 120 volt motor and it also has a pipe connecting the return flue direct with the intake for the fan, which is not on Exhibit DD. This follows the teaching of my patent. This return pipe to the fan intake is not shown in Exhibit DD.

"Q You made this change on here to make Exhibit KK conform to the patent, rather than what you had built in DD?

"A How come me to do that, I had my patent drawed in that specification on purpose for that, this is like that is on my patent, like I intended for that to be there.

"Q You intended for that pipe—17-A was part of what you had invented at the time you applied for your patent; that is right, isn't it?

(Deposition of Roy F. Fullington)

"A Yes, sir.

"Q And yet that wasn't on DD?

"A That wasn't on DD.

"Q So that you changed your ideas after you tried out the device that had DD in it; you changed your ideas, didn't you?

"A I changed my idea on this when I drawed my specification."

I did not change my ideas as to Exhibit DD because Exhibit DD would not work, for it did work.

"Q That re-circulation is something you thought you had better add to your patent when you put it in?

"A Yes, sir.

"BY MR. TAULBEE: Witness indicates Exhibit KK.

"BY MR. ELY: That is the re-circulation provided on KK that we have just been talking about? A Yes, sir.

"Q You didn't have that on DD? A That is not on DD.

"Q You never operated any device that had this apparatus, KK, in it? A That is the only device I operated (indicating).

"Q That is, DD? This is the device which has the re-circulation in it, Exhibit KK? A DD has the re-circulation.

"Q Let's go over that again; as I understand it, this pipe here that goes back to the fan intake is the device providing the re-circulation? A That should have a return re-circulation.

"Q That you get in KK? A Yes, sir.

(Deposition of Roy F. Fullington)

"Q And there isn't anything like that on DD? A Yes, sir, the re-circulation through the room.

"Q Goes into the room and then goes back? A Yes, sir.

"Q Perhaps? A It does.

"Q Do you mean to say that the same air which is delivered by this small vertical pipe will get back into the fan again? A Yes, sir.

"Q You call that re-circulation? A. Yes, sir, that is re-circulation of a portion of the air.

"Q What is this on KK (indicating)? A That is re-circulation.

"Q But this air re-circulates in KK, doesn't go back into the room, does it? A State that again.

"Q The air which is re-circulated in KK doesn't go into the room, does it? A Yes, sir, comes right out through it.

"Q What is this hole here that I stick my finger in? A That is intended for a return re-circulation.

"Q Then the other air, the majority of the air, however, passes out into the room, does it not? A Yes, sir.

"Q You had this idea of re-circulation in mind at the time you applied for your patent, did you not? A I sure did. Would you let me explain—

"BY MR. TAULBEE: Go ahead.

"A My intention was on this, and I have put it in my writing, and it was missed, for a little hole in there for re-circulation, and I thought that was in there until after I went to Los Angeles, and we examined it, and I seen it wasn't; that was my mistake.

(Deposition of Roy F. Fullington)

"Q You thought when you applied for your patent that you needed to take the air directly back into the circuit again? A I sure did, let me explain the reason I put this in there; I put this in there, if I had a colder room, this would bring the air back through and the air would be partly heated, and it wouldn't be quite such a chill.

"Q You didn't get that result with DD? A I did not; I thought that was in the patent.

"Q This device, KK, is much larger than DD, isn't it? A Yes, sir.

"Q Why did you make it larger? A Well, I don't know; I didn't have this to compare the size of it, and really I didn't think it would make any difference; if we had a larger machine, we would want a larger fan.

"Q But you built that device to show him what you intended to have on incubator CC, did you not? A I told him it wasn't quite exact; I told him this here outlet pipe curved up."

The outlet pipe, as a part of the device Exhibit DD, does not deliver to the fan casing. I have never used the device exemplified by the Exhibit KK. The small hole isn't shown in my patent and I didn't make KK like the patent in that respect. I put in my drawings, for my attorneys, the principle of recirculation, and I had the importance of that in mind at the time I sent the application to my attorneys, but it was left out of the patent and the patent drawings. This principle of recirculation was not suggested to me by Mr. Jandeburr, but I had it in mind in 1914.

"A I told Mr. Jandeburr that should have a hole.

(Deposition of Roy F. Fullington)

"Q And it should have a hole in it in 1914? A Like the patent—if we were going to make DD like the patent, it wouldn't have been no account; there would have been a pipe back here where it recirculates on the baffle, where there is a curve; that wouldn't work; you know that; don't you?

"Q I don't know whether I follow you; I know lots of things don't work, but I don't know what would work and what wouldn't work.

"A I took the wafer out, you know this wouldn't have worked?

"Q I am not explaining why your patent didn't work. A I want to prove to you that the drawing isn't right.

"Q The patent won't operate? A DD operates.

"Q And KK operates, and KK has re-circulation? A KK has re-circulation.

"Q And you never used KK? A Never did."

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

"Q As a matter of fact, there is no difference in the way the air circulates after it is taken in by the fan. through the pipe, up to the end of the baffle plate and circulates around the entire baffle plate, there is no difference in KK and DD? A None whatever.

"Q In DD the air actually circulates? A Yes, sir.

"Q You had that in mind in 1914? A Yes, sir.

"Q That was one of the most important features of your invention?

"A Yes, sir."

(Deposition of Roy F. Fullington)

RE-CROSS EXAMINATION

BY MR. ELY:

Mr. Grooves had the device, Exhibit DD, so I made the device, Exhibit KK, so that Mr. Jandeburr could see the principle on which the former operated. Mr. Jandeburr did not tell me what he wanted nor suggest a device with recirculation in it, but to make a device as near like my patent as I could and as near like the device Exhibit DD. Exhibit KK is a combination of Exhibit DD and the patent.

"Q KK works like the patent? BY MR. TAULBEE: Object to that as repetition. BY MR. ELY: I am trying to get this witness to state something definitely. BY MR. TAULBEE: You have asked that same question eight or ten times.

"BY THE WITNESS: I can't see no difference: KK motor is run off the same machine as DD—KK fan is run off the same machine as DD fan is run off of; they both run off a motor, the same device, only DD runs on dry cells and KK runs off of a hundred and twenty volts.

"Q That is the only difference between DD and KK? A That is the only difference in the fan.

"Q Are there any other differences between DD and KK than that?

"A None, only what I showed you.

"Q Are there differences? A They work on the same—

"Q I asked you whether there are any differences?

"BY MR. TAULBEE: I am going to object to this and instruct the witness not to answer; it has been gone over too many times.

(Deposition of Roy F. Fullington)

"BY MR. ELY: He hasn't told me what he made KK from. In the first place, you haven't got any right to put KK in; I have got a right to ask him what he made KK for. BY MR. TAULBEE: How many times have you got a right to ask him? BY MR. ELY: Until I get an answer out of this witness that is intelligent. BY MR. TAULBEE: That is your own fault. BY MR. ELY: Let's go over this again; as I understand it, you made KK for Mr. Jandeburr to show him the construction of the patent, is that right? A Yes, sir.

"BY MR. TAULBEE: Just a minute, before you answer, I want to put in a definite objection to any repetition of this matter; it has been repeated time and again; counsel is taking undue liberty with the witness; while I do not want to instruct the witness not to answer, I do object strenuously to going into this again and again, and any answers to those questions I ask be stricken from the record.

"BY MR. ELY: Will you answer my question? Read the question.

(The notary reads the previous question as follows:)

" 'BY MR. ELY: Let's go over this again; as I understand it, you made KK for Mr. Jandeburr to show him the construction of the patent, is that right?'

"BY MR. ELY: What was the answer? (The notary reads the previous answer as follows:) " 'Yes, sir.' "

FURTHER RE-DIRECT EXAMINATION

BY MR. TAULBEE:

My main purpose in making Exhibit KK was so that it would operate off of a direct electric current instead of batteries.

(Deposition of Roy F. Fullington)

FURTHER RE-CROSS EXAMINATION

BY MR. ELY:

I did not make Exhibit KK to change the recirculation. I tried to fix it as best I could in the patent.

NOME L. BOWEN, of lawful age, being produced, sworn and examined on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 48 years of age and have lived all of my life on a farm eight miles north of Clifton Hill, Missouri. I am acquainted with the Roy F. Fullington present, with whom I have exchanged social calls about three times yearly. One of those calls was made in April, or the first part of May, of the year 1914. I fix this date by the fact that in February of the same year I purchased a Bell City incubator and during the first setting of eggs therein my first little girl was born and it was about three or four weeks after her mother recovered that we visited Mr. Fullington. He was operating in his home the same incubator which I see here and have examined, and it was set with eggs. I did not examine it carefully then, I opened the door and he was showing me things, he did not keep it open long, just raised it a little bit, then closed it up. I knew it was then in operation because I could see the lamp and could hear the motor when it would occasionally run. The motor did not run all the time, just occasionally. With the door open I could see that little thing he had in there but it has been so long I have just about forgotten. He had the eggs in there, it was

(Deposition of Roy F. Fullington)

a full tray of eggs. It was three months before we returned to Mr. Fullington's so I did not see any eggs actually hatch, and the incubator was not being operated at the time of my second visit. Mr. Fullington did not explain the operation or function of the machine when I first saw it. I have no interest in this law suit.

CROSS EXAMINATION

BY MR. ELY:

Mr. Fullington did not say he had a patent on the incubator when I first saw it in operation. When the incubator became hot the fan would start, run a little bit and then stop. I have not seen the incubator operate since that first time in 1914. I did not see the same incubator run without the fan. When it would get hot the fan would run and cool it down, then it would quit.

"Q How often did the fan run while you were standing there? A Well, I don't know. Q Did it run once? A Yes, it run once; we wasn't there but just a little bit, he had the incubator in the other room from where we was at. Q What was the incubator he had in the other room? BY MR. TAULBEE: He had this incubator in the other room? BY THE WITNESS: Yes. Q He had this incubator in the other room? A Yes. Q Didn't you go and look at the incubator? A Yes, sir, but I wasn't there but just a little bit. Q When you were in there, was the fan running at that time? A Yes, I heard it running. Q You heard some noise? A He had a little fan; I don't know just how it was—a little bit, a second or two. Q How long a time between the running of the fan; was it half an hour? A No—

(Deposition of William Roy Epperly)

I don't know, now; we didn't stay in there but just a few minutes. Q You didn't really hear the fan but once, did you? A No, I don't know for sure that I did; me and the boys all went out to pitch horseshoes that day. Q You didn't pay much attention to it? A No, sir, I didn't pay much attention to it; when we would go down there, we was always pitching horseshoes; I am used to them; we always had two or three; we have got three now; I am using other incubators; I never paid much attention to it."

REDIRECT EXAMINATION

by Mr. Taulbee:

I know this is the same machine I saw at Mr. Fullington's on that day.

RECROSS EXAMINATION

by Mr. Ely:

It looks exactly like it and was purchased the same spring that we acquired our Bell City incubator.

WILLIAM ROY EPPERLY

of lawful age, being produced sworn and examined on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 46 years old and all of my life have lived on a farm six miles north of Clifton Hill, Missouri. I know Mr. Fullington and first learned of his invention the latter part of February, 1914. I fix the date because I have just referred to my account books which indicate that I leased a big farm there in that neighborhood and Mr.

(Deposition of William Roy Epperly)

Fullington helped me build a stock barn on the property. I got possession of the farm the first day of January, 1914, and leased it from Major Joseph Frazier, who was in the Philippine Islands at the time and the lease was accomplished through correspondence. My records indicate that I talked to Mr. Fullington just before the Major returned, which was in March. We did not commence building the barn until along in June, but Mr. Fullington helped me get out the lumber and transport it to the mill.

The first time I visited Mr. Fullington he was making the incubator and it was not in operation, and I saw the baffle plate which is a part of Exhibit DD herein. I never saw the motor, he had the fan cut out. I don't remember the other parts. Mr. Fullington explained to me that he was making a device to circulate air through an incubator to keep it from getting too hot. He did not tell me what sort of an incubator he was going to use and did not show it to me. That was in the latter part of February, 1914. I again visited Mr. Fullington in March or April of 1914 further to discuss with him the work I wanted him to do. We reached an agreement about the work and the next day, which I think was the 13th day of March, we began getting out the timber. At the time of this second visit I saw Mr. Fullington's incubator and all of the parts comprising it and the fan attachment, and I saw a setting of eggs in it. Mr. Fullington pulled out the tray, which was full of eggs and shells, and it had in it about fifty chicks already hatched, although I did not count them. The lamp was in use and the fan operated twice, during the two hours I was there when the machine became too hot. Mr. Fullington explained that

(Deposition of William Roy Epperly)

the purpose of the fan was to circulate air throughout the incubator and prevent it from becoming too hot. The fan did not run continuously. When we looked into the chamber where the eggs and chicks were contained just after the fan stopped, I could see the down, or fine feathers, from the chicks working upward around the edges and above the egg tray and above the eggs and chicks thereon. The chicks which were hatched looked healthy. This is the same device here which I saw at Mr. Fullington's on my second visit. I wish to correct myself on the date which I gave; it was the 13th day of May instead of March, 1914, that I visited Mr. Fullington the second time and which day I fix by looking at my records where I kept account of my farm work. The following day Mr. Fullington began helping me cut the timber for the barn I intended to construct.

CROSS EXAMINATION

BY MR. ELY:

During the two hours I watched the incubator the fan ran, so far as I can remember, but twice. It ran longer one time than the other and, as near as I can judge, it was about two or three minutes before it stopped. That is just a rough estimate. I did not time the fan, but will now try to estimate the same period which I think the fan operated by tapping a pencil at the beginning and at the end of such estimated period and which said period Mr. Taggart states that he timed with his watch.

(Deposition of Mrs. Golden Fullington)

REDIRECT EXAMINATION

BY MR. TAULBEE:

"In testifying that the fan ran about two minutes, I was merely estimating from my best recollection.

BY MR. ELY: Will you make a note that the witness tapped with a pencil, and then after an interval tapped again. You merely guessed at it at the time you heard the fan operate.

THE WITNESS: Yes, sir."

MRS. GOLDEN FULLINGTON,

being of lawful age, being produced, sworn and examined on the part of defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I have been Mr. Roy F. Fullington's wife since December 1907 and I have lived in Clifton Hill, Missouri, for 22 years. I first learned that my husband had his idea about his invention when we got our old Trusty incubator, which I see here marked as Exhibit CC. He began to stab at it then. I do not remember when he purchased the incubator but I hatched one setting of eggs with it before my husband used it with his fan attachment. During that first hatching I had to watch the incubator very closely and when it became too hot I would have to pull the tray out and see about the eggs. That was necessary several times during the day. Mr. Fullington first began to work on his invention, which I see here exemplified by the Exhibit marked DD, in the early part of the spring of 1913. At that time I was not satisfied with the manner

(Deposition of Mrs. Golden Fullington)

in which the old Trusty operated, as it would get too hot and required too much and too close attention. My opinion was that the temperature remained too high for really successful incubation and I told my husband that. It was then he began to study out his invention. I knew all along that he was working on some feature to act as an improvement on the incubator but I do not know just when he began. I first saw the device, Exhibit DD, after it was completed about April, 1914. Mr. Hicken helped my husband make the device which he thought would prevent our incubator overheating. Mr. Fullington said his invention would circulate cold air through the incubator and expel the hot air. After my husband had installed the device he had invented on the incubator we placed the first setting of about 120 eggs therein about May, 1914. From that number of eggs I got about 100 healthy chicks, and I know that to be an extra good hatch. During the period of incubation I determined by actual thermometer tests that the temperature was much more uniform than when the incubator was used without my husband's invention. When it got too hot, the wafer on the inside raised and turned it off. When it gets hot the wafer would start the fan. The first week eggs should be at about 102° and the second and third weeks about 104 to 105°. During the hatch with my husband's invention I obtained the temperature which I considered to be the most favorable.

A number of neighbors saw the machine in operation as it was kept in an open room and was never concealed from view. Some of those neighbors were Messrs. Egan, Epperly, Bowen, and Sears. We afterwards hatched out

(Deposition of Mrs. Golden Fullington)

two more sets of eggs and the second time I used larger eggs and put in the tray only about 110 or 112 eggs. My husband's invention was used during the second hatch and temperatures were satisfactory and I obtained from this hatch 97 healthy chicks.

After that we started the third hatch and out of 110 or 112 eggs obtained 90 odd chicks, but I am not sure of the exact number. I am not sure that I saw any evidences of circulation in the incubator during these hatches as I never paid any attention to that.

"Q Was there any way you could see evidence of air circulating in the chamber? A I don't remember that I noticed any air in it, but I am sure it was in there.

Q The fan was working? A Yes, the fan would work when it would get too hot.

Q When it cooled down the thermometer would cut off the fan? A Yes, sir.

Q When it got hot again, to a certain point, the fan would start up again and start up the circulation? A Yes, sir."

Before my husband attached his device there was no circulation through the incubator. There was much more labor attached to using the incubator without my husband's invention than with it. The incubator, after this third hatching, was used no more that year, but I used it the next year without my husband's attachment, as we were unable to buy the necessary batteries which did not last very long. I am positive the device I saw here is the same one that my husband used and made and which since then has been shipped around considerably.

(Deposition of B. E. Hicken)

CROSS EXAMINATION

BY MR. ELY:

The overheating which my husband's device was supposed to take care of occurred after the second week of incubation and it was during the last half of the hatch, or about a week and a half, that the fan operated, although it would sometimes run during the first part of the hatch, depending upon whether or not the incubator became too hot, but the trouble was at the last. Of course, eggs become much hotter just as they are about to hatch. The purpose of blowing air through the incubator was to take out excess heat. I afterwards operated the incubator without my husband's attachment.

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

All of the overheating I have testified to occurred before my husband's attachment was installed on the incubator and I had no trouble from overheating after my husband's device was used.

B. E. HICKEN,

of lawful age, being produced, sworn and examined on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 44 years old, live at Huntsville, Missouri, but lived at Prairie Hill in 1913 and 1914. I am a mechanic by trade, grew up in my father's shop and have had mechanical training in schools such as Ray's and Sweeney's at Kansas City, Mo., and I began to work around my father's

shop very early, as I intended to follow his trade and alternating with that I worked as a farmer. My father and I first ran a blacksmith shop, then a garage, and during the latter period I invented a gas soldering iron, which I had patented, and after which I built a new shop and factory at Prairie Hill and started manufacturing those irons. This occurred along between 1913 and 1914. After that I did not follow the trade of general mechanic except to do an occasional job for my friends. My early training was quite diversified including blacksmith work, welding and automobile work.

I have known Mr. Roy F. Fullington something like thirty years and long ago did some farm work for him. Mr. Fullington was of a mechanical turn of mind.

During the winter and spring of 1914 Mr. Fullington broached the subject of his invention of an attachment for an incubator. During the preceding fall I had heard that Mr. Fullington was working on an invention of this kind and he had come to see me a time or two about making this device for him but, for some reason, perhaps shortness of funds, he put it off until later on. It was in the spring of 1914 that he told me of what he had in mind. Mr. Fullington wanted me to make a machine that would keep an incubator at an even temperature and he proposed to accomplish that with a fan. He told me he had been having trouble with his incubator and had to give it too much attention. I had operated incubators myself. This fan attachment Mr. Fullington proposed was to accomplish a recirculation of air in the incubator and I actually constructed a device which embodied that idea. I concluded that when cold air was brought in from

(Deposition of B. E. Hicken)

the outside and mixed with the warm air in the incubator the temperature would be lowered, and that was what Mr. Fullington proposed.

Exhibit DD is the device which we constructed to embody Mr. Fullington's conception and no part or feature has been added to or subtracted from the device. The device consists of a fan, fan box, motor, closed pipe, baffle plate with holes in the bottom of it, each about 1/2" in diameter, all of which compose the device as made by me under Mr. Fullington's directions. We made the fan and housing using a bit of tin for the latter, with the baffle plate made of galvanized iron which we obtained from my shop. The device must have been finished in February or March of 1914, and Mr. Fullington took it home with him. I never saw it in operation on an incubator.

Mr. Fullington had first told me that he wanted the device made so that he could cool it down, he wanted a thermostat that would make an electric contact and start the fan and cool the incubator down, and when the incubator would cool sufficiently, that it would automatically shut off—I never saw it work in an incubator.

The theory upon which this device, Exhibit DD, worked in conjunction with an incubator is as follows:

Air is sucked in through the horizontal intake to the left of the device and the fan then forces the air through the closed tube on the right-hand side until it reaches a point where it turns back and gradually drifts out here and down, due to the fact that cold air naturally settles. The curved portion of the baffle plate opposite the closed pipe distributes some of the air over the top thereof, while

some of the air circulates along the open strip and is expelled from the incubator, but I would naturally think that most of the air would be distributed over the part of the baffle plate we refer to as the closed pipe.

I am acquainted with Mr. Forrest O. Sears, knew him in 1913 and 1914, and discussed with him Mr. Fullington's invention and the prospect of our exploiting it, but, as we had enough to do with our little factory running, we decided not to undertake anything additional. Mr. Sears, Mr. Snyder, my father and I were interested in manufacturing soldering irons, and all of them, excepting myself, put in the enterprise $1,000 apiece. Our company was formed subsequent to my making Mr. Fullington's device. It would require considerable money to promote a device like the Fullington invention and we figured that we did not have enough to handle it. Had we been able to handle it we intended to make incubators and pay Mr. Fullington a royalty. We wanted to do that because the invention looked like a good thing to us, but it would have taken practically everything we had to carry on with and that was the only reason we did not go ahead with Mr. Fullington's invention and, there isn't yet, if I had a chance to exploit it.

CROSS EXAMINATION

BY MR. ELY:

Mr. Fullington lived four or five miles from my shop and I never went to his house to see the device which we made in operation. Yet I seriously considered taking it on. I did not have to look at it to know that it would work, as I would know exactly how it worked.

(Deposition of B. E. Hicken)

"Q And you didn't actually invest any money in it? A This device? Q Yes. A I did not. Q Did any of your friends? A Not that I know of. Q Did you ever discuss with Mr. Fullington what he would want for the invention? A Not personally, no, sir. Q Did anybody ever discuss it with him? BY MR. TAULBEE: I object to that. Q Did anybody ever discuss it with him that you know of? A Not that I know of. Q Yet you seriously considered taking it on, notwithstanding that fact? A Well, I think enough of it that I would still do it if I had a chance at it."

"Q Do you know how that fan was supposed to work; was it to work continuously?

A Why, I wouldn't think so.

Q Do you know whether it did work continuously, or intermittently?

A Well, from what Mr. Fullington said, it worked off that thermostat.

Q Did it work all the time?

A From what I understood him to say, when the heat would rise to a certain temperature, it would close the contact, start the motor, and when the temperature got right again, the motor would stop."

In operation considerable of the cold air would drift down through the holes in the baffle plate, but a large percentage of it would be deflected and go over the top. Any amount of air equivalent to the amount taken in would not necessarily be expelled from the incubator because the temperature would make some difference. In other words, the temperature would have to equalize with the outside temperature so that there would be no pressure

(Deposition of W. G. Lewis)

built up in the incubator for some time. That is a matter of physics. The fan and the fan casing were both made of a tin can.

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

I do not know whether one of my partners in the business had seen the Fullington device in operation when we discussed exploiting it. I have no interest at all in the outcome of this law suit.

(Whereupon counsel for the respective parties stipulated and agreed that heretofore, and during the cross examination of the witness Epperly, Mr. Taggart and Mr. Aitken timed the period indicated by the said witness during which the fan on the incubator operated, as between 18 and 20 seconds.)

(Whereupon an adjournment was taken until the following day, December 9, 1930, at which time, all parties being present, the following procedure was had:)

W. G. LEWIS,

of lawful age, being produced, sworn and examined on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 45 years old and for twelve or thirteen years have been, and am still, manager of the Commercial Hatchery at Lincoln, Nebraska. I am also President of the corporation which office I have held ever since the business was incorporated in 1922.

(Deposition of W. G. Lewis)

My duties briefly consist of providing eggs for our incubators, purchase of merchandise and supplies, hiring of help, general supervision of the books of the office, records, matters of finance and also supervision of sales, advertising and such things. I also supervise the actual operation of the hatchery and in the earlier years, before my volume of business became so large, I personally did all of the incubator work and devoted a great deal of time to inventing and building incubators, but over the last few years I have employed a foreman and other help to do the actual work, but each one of these men has been trained by me personally in his duties. I have never taken in an outside expert, but have taken untrained men and trained them myself because I am familiar with all the details of operation.

I am licensed by the American Poultry Association as a poultry judge, which is considerable of a distinction and can be obtained only by possessing considerable technical information about poultry.

Prior to my present connection I had incubator hatching experience over a number of years and taught for several years as head of the department of physics in the normal school at Cape Girardeau, Missouri, where I had some of my advanced students construct various incubators in the laboratory, heating devices, thermostats and the like, and we were criticized at times for turning our physics department into an incubator factory. My students made very successful working incubators and I dare say some of them could still be found in operation. A considerable number of them were made, most of them in fact, in 1914.

(Deposition of W. G. Lewis)

My occupation in 1915 and 1916 permitted visits to poultry farms purely as a matter of personal interest and it was during those years that I saw the incubator at Pacific, Missouri. I have closely observed and had wide experience in poultry hatching since 1914.

I have a Bachelor's Degree from the Michigan State Normal College, and Bachelor of Arts and Bachelor of Pedagogy Degrees from Columbia University and Master of Science Degree from Chicago University. At the last named university I majored in physics and studied particularly biology, zoology and botany. Before 1914 I taught college physics and elementary electrical engineering for several years. I am shown the assembled incubator and Fulling on attachment, with which I am familiar, and in the operation of which the fan necessarily forces air through the closed pipe with sufficient clearance at the end of it and the baffle plate through which to expel the air, after which the air is thrown around in a swirl by the way the baffle plate is shaped. In other words, the air strikes the end of the baffle plate after which it would come back over the said baffle plate, some of the air going down through the holes therein into the egg chamber and other portions of the air being thrown over the top through the wide opening thereat. The air thereafter follows no particular direction, but would be mixed and mingled with the air already in the incubating chamber. The majority of the air would leave the chamber through the exhaust pipe, but that depends upon the construction of the box. For instance, if the door is not tight some air might be expelled in that way. Whenever the fan operated, there would be a movement of air through the

(Deposition of W. G. Lewis)

chamber and I would call that a circulation of air and continuously so long as the fan operates. A compensating amount of air as inside the incubator must leave it, the air taken in would be necessarily diffused throughout and mingled with the air in the chamber before being driven out.

This sort of an operation, with the motor driven fan forcing air into the incubator at a lower temperature than the air already there, results in lowering the temperature of the air in the chamber and that is the result which one strives to obtain in incubation, because eggs in the process of incubating produce heat which causes a rise in the temperature unless that heat is in some way carried away. An incubator must have some means provided for removing heat which is produced by the life process in the egg. The chemical products of life stirring within the egg exhale through the shell thereof and befoul the air, thus requiring certain changes in the air to keep it pure. It is, of course, desirable to keep the egg chamber at a substantially uniform temperature.

The desired result of substantially uniform temperature is attained with a device like the Fullington invention, which diffuses pure air through the chamber and, at the same time, forces a compensating amount of air out of the chamber; or, in other words, removes the existing heat and the chemical products of the life within the eggs and thereby lowers the temperature and, at the same time, keeps the air within the chamber sufficiently pure to maintain the life in the embryo.

Device DD, when used in connection with Exhibit CC, and various other elements comprising that combination

incubator, would certainly accomplish the desirable results which I have enumerated. In building the numerous incubators to which I referred while teaching advanced physics in the Cape Girardeau Normal school, similar questions of ventilation and temperature control had been solved in all of those incubators which my students made under my direction. When I discontinued teaching I built numerous smaller incubators. After I went to Lincoln I built a five thousand egg incubator in the basement of my home, where I successfully operated it for one year. The following year I built a seventy-five thousand egg incubator and still later on constructed two forty thousand egg incubators, and in all of which the problem of ventilation and circulation of air had to be studied and met, and it is a problem to which I have given many years of very careful consideration and I eventually solved that problem, but it would entail a very long discussion of means to explain that matter.

In all of the work I have enumerated, I used forced draft circulation and began the use of it in the fall of 1918.

The Fullington incubator before me could be built in a larger size and the various parts comprising the ensemble could also be enlarged, as could be Exhibit DD. (Question objected to as immaterial) With an enlarged model of this device it would be possible and practical to use more than one egg tray, placed in tiers, or in any other practical way of arrangement. (Same objection)

I am familiar with the type of old Trusty incubator in use during the years 1913 and 1914, and actually operated one at that time. There was no means provided by the

(Deposition of W. G. Lewis)

company manufacturing the old Trusty to supply a forced circulation or draft during those years.

CROSS EXAMINATION

BY MR. ELY:

So far as I know all of the old Trusty incubators were still air machines. All incubators at that time operated on that principle. I would not say they were all, although a number of them did. I never saw anything but a still air incubator prior to 1913 or 1914.

We are now using at my plant nine Smith incubators of which seven are 47,000 egg capacity and two are 52,000 egg capacity, but in which I set only approximately 40,000 eggs, because it is common for manufacturers to overrate the capacity of their machines, and we now have, in our various plants, 27 Robbins incubators of the type "23", each with a manufacturer's rating of 23,000 eggs; we also have nine Buckeye, No. 7, incubators with a manufacturer's rating of 12,000, and in addition we have four Petersime No. 15 incubators and one Blue Hen, each with a capacity of about 16,000 eggs. The last named incubator works on the still air principle.

Both the Smith and Robbins machines have fans located within them. To attain successful hatching a certain amount of moisture must be maintained in the air which is in contact with the eggs. I answer the question in that way because the words "conserving" and "supplying" are often confused. It is generally conceded that a certain amount of air moisture evaporates during the process of incubation but I am doubtful as to the amount. I think it could be very much lower than is often the case. Of

course, excessive drying out of the egg would destroy or damage the embryo.

I would want a definition of what you mean by "circulated" before saying that air in the Smith and Robbins machines is circulated by fans, but certainly the fans operate within those machines. I do not know how much air, in terms of volume, is circulated by the fans in the Robbins machine and, in my opinion, that is an extremely difficult point to decide, in fact one that is practically impossible of a correct determination.

The large paddle, so-called fan, is in the closed box in the Robbins incubator, except for very restricted openings, and it sets up in there a violent swirling agitation of the air and no one can say how many thousand cubic feet per minute it moves, in view of the fact that there are innumerable cross currents and eddys—currents in one part of the machine going in one direction and two inches over from that point a violent motion of air in the other direction. In my opinion no man is justified in giving a definite figure, or saying that the fan in the Robbins machine throws any certain volume of air; I think the construction and operation of the fan would preclude any accurate determination. I know that is contrary to what others have said and I did not hear what Mr. Daugherty said, but in my opinion, in order definitely to determine the amount of air which a fan throws, it would be necessary to have the air therefrom pass through an aperture, whose cross section could be measured, in which the velocity of the air likewise could be measured; only by such means can the volume of air being moved be exactly determined.

(Deposition of W. G. Lewis)

No man in the world can accurately determine the amount of air which a fan moves when it simply stands in a closed box and creates swirls, eddys and cross currents moving in opposite directions in an infinite variety of motion; it is beyond the ability of man to measure the air velocity from such a fan in cubic feet of air per minute. I have tried to measure the air moving in the Robbins incubator and there is a large volume under motion therein. I understand the principles upon which the Fullington incubator operates, and I am told what the testimony in regard thereto relates, but I do not see any reason why Fullington could not have set eggs of different hatches in his incubator. As to what he actually did I do not know, as I did not see the machine in 1914.

I have operated Robbins machines with the doors open for periods of several hours, or perhaps all day, but that is not my regular practice, which is to close all of the doors. I have also operated Smith incubators for many hours, perhaps to the number of twenty-four, with the door open and in both cases, that is with respect to both the Robbins and Smith machines, my reason for so doing was due to the fact that the temperature in the room was high and we found difficulty in keeping the temperature within the machines down, and the doors were opened in order to lower the temperature, but we have found that to be necessary much more with the Smith machines than with the Robbins.

I used fans in some of the machines which I experimented with and mounted those fans in apertures in the wall, so that they might be said to be as much outside as inside of the machine. I provided restricted openings for

inlet and outlet of air, because an approximately equal volume of air must go in and out. A machine that is air tight must expel a volume of air equal to the amount it takes in and, of course, this is true conversely. Of course, if there is a difference in the temperature of the air leaving and the air entering the incubator, there is some slight change in volume, but the same mass of air would be involved. In other words, a slight correction in volume would be due to difference in temperature.

I am interested in the outcome of this law suit as a Robbins user. I am not a member of the association of Robbins users, and I understand there is such an association. I know there was a discussion of such an association, but whether it ever materialized I do not know; at least I am not a member, and I have not contributed to it. Furthermore, I am not contributing to the defense of this cause, except in time and what information I can offer.

I first saw a reference to Fullington's patent a number of years ago, but I first had definite knowledge of any use by Fullington in 1930. I did not run across Fullington when I was traveling in Missouri. I heard a reference to his machine some years ago but that is rather indefinite in my mind. I made it a point to learn practically everything about the Fullington use and machine in 1930, because I had been given to understand, by representatives of the Smith Incubator Company, that I was liable to a very severe penalty for the use of the Robbins machine if the Smith Company's contention in regard to

(Deposition of W. G. Lewis)

that machine should be ultimately upheld in the courts. That made me, of course, very much interested in the outcome of the Smith-Robbins litigation, and I immediately interested myself in some of the earlier uses of incubation equipment such as the Fullington one.

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

I am asked to describe more in detail the circulation of air in the Smith incubator. A series of panels form a tight partition with four circular openings therein and in each of those openings is mounted an electric fan. Those fans rotate and drive the air downwardly through those openings into the space under this tight overhead partition. The air is driven down between the side walls of this chamber, which consists of heavy curtains, strikes the floor and mushrooms, moves outward and sideways in both directions, passing under the curtains and into the two side compartments where the egg trays are mounted, and then passes upward around and among the eggs in the trays until it reaches the top of the machine, where a limited portion of the air passes through vents and escapes to the outer air. The larger proportion of the air goes over the tops of the curtains and comes into the chamber immediately above the fan, where it is mixed with fresh air coming in through an inlet opening, and is caught by the four fans and again driven downward to complete, or to continue that cycle over and over again. I might say in this connection that it was this I had in mind in trying to explain that the volume of air could be definitely determined in the Smith machine because it comes down through openings of very definite size and it cannot

move in any other path, so that by placing an airometer in those openings, its speed can be very definitely determined, and by multiplying the cross section by the speed the number of cubic feet can be very accurately computed.

After leaving the fan the course that the air takes is down through that central corridor and it will not diffuse over the eggs until after it reaches the point at the bottom of the curtains. I do not find a similar current of air and course taken by the air in the Robbins machine.

Staged incubation means having eggs of different ages in the same incubating chamber at the same time. There is a definite order as to the ages at which eggs are used in the Smith machine. Fresh eggs first are placed at the very top and each three or four days thereafter those eggs are moved downward a sufficient distance to permit other fresh eggs to be placed in the original top position, so that by the time the eggs have been in long enough to hatch the hatching eggs are at the bottom of the machine. In other words, the hatching of eggs increases progressively from top to bottom of the machine.

Staged incubation occurs in the Robbins incubator, but there is no definite arrangement whatever, either as described by the manufacturer, so far as I know, and certainly not in my practice as to the arrangement of those various stages. In other words, there is no definite or exact order of eggs of the various ages in the Robbins machine. My practice is to place trays of eggs in the Robbins machine in such a way as to avoid having eggs of a similar age in adjacent trays and in which respect I might say it is exactly the opposite of the Smith way as we might have the fresh eggs in a tray adjacent to the

(Deposition of W. G. Lewis)

oldest eggs, or to eggs in an intermediate stage of incubation. In the use of the Robbins incubators, the less advanced eggs are not at the top and the more advanced eggs are not at the bottom. In fact the position of the trays is not changed throughout the incubation, except at the 18th day when they are taken from the turning rack and placed in stationary trays.

In the Smith process, after the air leaves the fan it is forced downward against the floor, thence it passes through under the curtains and strikes first the hatching rack, that is the rack wherein eggs are actually hatching, if there are any eggs at that stage of incubation; from that hatching rack the air passes upward and then strikes next the eggs which next will go into the hatching rack and then as that air proceeds to the top of the machine it passes in order from eggs in the advanced stages to those in the less advanced stages and in the order of their age and incubation. In no sense whatever is that true of the Robbins practice.

Staged incubation is common usage in the hatchery art and I have long been familiar with that practice; in fact, it was in use when I first became interested in incubators in 1913 or 1914, and it is common knowledge that staged incubation was in use a number of years prior to when I first took up the subject. (Objection by plaintiffs as hearsay.)

I have had much better success in the use of the Robbins incubators than with the Smith incubators. (Objection by plaintiff.) I used both makes of machines and, in fact, used a Smith incubator before I knew of the

(Deposition of W. G. Lewis)

Robbins. I have no financial interest in the Robbins Company whatever.

(Whereupon counsel for defendant signified his intention to interrogate the witness upon the Lawry prior public use, and counsel for plaintiffs admitted as of record that if the same questions were asked of the witness, as to his qualifications as an expert, the same replies would be given as upon his preceeding direct examination in regard to the Fullington prior public use.)

DIRECT EXAMINATION

BY MR. TAULBEE:

I first learned of the so-called Rolla Lawry prior public use in the early summer of 1916.

As I have previously stated, while traveling about the country and visiting high schools and colleges, and as a matter of personal interest in poultry, and whenever I was in a territory where there was something of unusual interest to poultry men, I would make a point to visit the place and learn all about it. As I said, early in the summer of 1916, and in the course of my travels, I was near Pacific, Missouri. I had read advertisements and in various other ways heard a great deal about what was known as the Yesterlaid Egg Farm. This was one of the most widely known poultry farms at that time and I paid it a visit at Pacific, Missouri, where I looked over the poultry houses, equipment, etc. During this visit I was informed that the farm had a very large incubator in the basement of an ice house downtown. One of the employees, who very courteously showed me around the farm, gave me that information. I was very much interested in seeing

(Deposition of W. G. Lewis)

this incubator because I had been supervising the construction of a great many small machines. I then proceeded to the ice house in the downtown part of Pacific, Missouri, and was conducted to the basement where this incubator was built. It consisted of a large room. I went inside of it, observed its construction and studied out the path of the circulating air and the way everything operated. My interest in it arose from the fact of the mechanics involved and because of this incubator's bearing on the problem of hatching large quantities of eggs. The attendant, who showed me through, told me about the hatches he had been getting, how it operated and what he thought of it. My visit occurred just after the close of the hatching season, so the incubator was not operating, although it was in a condition to operate. I was shown the motor and fan, how it ran and ample opportunity was given me to study it, and I asked many questions about it at that time. I did not again see this incubator until the summer of 1930, at which time I again visited Pacific and found the same machine in the same location. It is built in a basement room so that it could not very well be taken out and it stands there today. In fact, I visited the same machine again this very morning about seven o'clock, and I went into the incubator and again made some measurements and saw the details of the structure as it stands there today. It is all complete at the present time with the exception of some very minor parts that have been lost during the intervening years.

I remember the name only of one man who was present during my first visit to this incubator, that of Mr. Rolla Lawry, who was the then manager of the Yesterlaid Egg

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Farm. I do not believe that Mr. Lawry himself went down to the incubator with me, but one of his employees, who seemed to be very well posted, accompanied me and answered my questions. I would say I was in the incubator during my first visit for a couple of hours. I definitely remember that when I left, and in thanking the attendant for his courtesy, I felt that I owed him an apology for taking up so much of his time, but I was intensely interested in the mechanics of the machine and I took time enough to make a very careful study of it.

My second visit, I believe, occurred in the summer of 1930, and the third visit, as I have said, occurred this morning, December 9, 1930.

I made measurements of the incubator this morning during my visit to it and I am, therefore, familiar with its major dimensions. I have also prepared a model of the entire incubator showing all of the essential features as I saw it when I first visited it in 1916, except that I have put no trays in my model, as I did not think it was necessary to do that in order to show the operation of the machine. I have that model with me now.

The entire operation of the incubator was explained to me during that first visit in 1916, as I have said, by an employee of the Yesterlaid Egg Farm and my knowledge of the incubator art generally also enabled me at that time to form my own opinion as to the process and method of incubation required in that incubator. I have evidence to indicate that the incubator was operated in the spring of 1916, and before my first visit, and it was also operated the year following. (Objection by plaintiff as hear-

(Deposition of W. G. Lewis)

say.) This is the model of that incubator which I made, as previously stated.

(Whereupon counsel for defendant requested that the said model incubator be marked for the purpose of identification as defendant's Exhibit MM)

One of counsel for defendant, Mr. William Aitken, requested me to make this model and I then proceeded to have a cabinet maker prepare it according to the specifications and instructions which I gave him. The model was made in the summer of 1930 and I oversaw and supervised its entire construction. I have examined it and found that it incorporates my ideas and, in fact, it is a miniature of the Lawry incubator which I saw in Missouri in 1916. The model shows all of the features of the Lawry incubator and the model will also operate so as to cause the air to circulate when the motor is started, exactly in the same way that it originally did in the Lawry incubator and, in fact, will still circulate in that machine.

The purpose of the model I have constructed is to show the general operation and circulation of air in the original Lawry incubator and the model will exactly duplicate that air circulation, and that is what I had in mind in having it constructed. Actually to hatch eggs in this model we would have to provide a thermostat, which, of course, I did not deem necessary for the purposes of this demonstration, and also we would have to provide some means of heating. I have only a toy stove put in for purposes of illustration. I deemed that the point to be demonstrated by this model was the circulation of air. The motor and fan with which this model is equipped can be operated, and, if you wish me to do so, I will be glad to start the

(Deposition of W. G. Lewis)

motor and demonstrate, by means of smoke, which will make the air currents visible and which will indicate how the model operates as to such circulation. This model is made to scale with respect to the original machine as to every essential particular. There are small nonessential details which I paid no attention to. In other words, the model correctly shows in miniature the dimensions of the incubating room, the heating chamber, the actual construction of the floor and ceiling and the inlet and outlet pipes just as they were in the original.

The original Lawry incubator chamber measured 7 feet in height, 14 feet in width and 17′ 9″ in length. I am asked to explain in detail the structure of the Lawry machine, which I first saw at Pacific, Missouri, on my first visit there in 1916, and its operation and I will proceed to indicate on this model, for the purposes of illustration, and letter the parts thereof in pencil as I proceed.

The incubator had one door, which I will mark on the model with the figure 1. Just inside that door was a small ante-chamber, which was a non-essential part of the incubator and in which, I understand, Mr. Lawry had a shower bath for the convenience of his operators. To illustrate that feature on the model I have shown simply a vacant chamber in which I have placed dry cell batteries to supply power for the motor which I use. In the original incubator a 110 volt motor operated from the power wires which entered the building. Upon entering the ante-room one was confronted by two doors, one immediately to the left, which I will mark with the figure 2 on the model. Through that door was the heating chamber 42″ wide in the original, 7′ high and which contained a Blau

(Deposition of W. G. Lewis)

gas heater, which is an ordinary gas burner. Blau gas is manufactured and distributed under pressure in steel cylinders and was much in use at that time. The flow of the compressed gas from the cylinder into the burner was regulated by a thermostat, which I have not shown in the model. The flame from the burner heated water in a jacket, which jacket I have also not shown in the model, and then circulated through a radiator, which I have illustrated by using some copper wires in the model. The motor was mounted on a shelf on the outer front of the incubator and was connected by a belt or a pulley, the shaft to which extended to the heating chamber and on the other end of which was mounted an exhaust fan. When this electric motor rotated the fan its action was to draw air from the heating chamber through the opening beside the fan, where the air was propelled by the fan blades into a passage way, which I will mark on the model with the figure 3. There were restricted openings for fresh air in the heating chamber, one of which I will mark on the model with the figure 4, and another one with the figure 5, and from which openings, in the model, I have extended a short piece of rubber tubing up the side and leading off to one corner, while in the actual machine at Pacific, this feature was of galvanized iron pipe, about 4″ in diameter, which extended from the same position in the incubator up along the side and out through the foundation wall of the building. You must remember that the incubator was built in the basement so that the top of it was about level with the outside ground. That passageway lay along the upper side of the incubator chamber, but entirely separate therefrom, and was straight

and horizontal and extended to the corner of the room where it turned and gradually arose in such a way as to discharge the air from the said passageway into a space above a false ceiling, which I will mark in the model with the figure 6 and which had numerous holes bored through it to permit the filtration of air downward into the egg chamber below and which will actually occur, due to the fact that the air is being forced by the action of the fan, which blows it along through this passageway into the space above the false ceiling and the permanent ceiling. When the air is forced into that space it must find some way out and, of course, it goes down through those numerous holes into the main body of the incubator, which is the egg chamber. In the floor we find the same construction, with regard to perforations or holes, as in the ceiling, and I will mark the false floor in the model with the figure 7, which, of course, is the upper floor, while the false ceiling is the lower ceiling. The air is forced down through the holes in the false floor into the space between it and the permanent floor, from which its only means of escape is through an opening at the corner of the egg chamber next to the heating chamber. That opening leads up into the latter mentioned chamber and under the Blau gas heater, so that the air rises through the heating chamber, passes around the heating coils and is then drawn through the opening into the fan and so completes the circuit by going around and around indefinitely.

The point I am making is that the air in the Lawry incubator had only one definite passage through which it was forced in the entire predetermined circuit.

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I will mark the heating chamber of the model with the figure 8 and the aperture from it into the fan with the figure 9, and the opening from underneath the false flooring with the figure 10. In order to see that opening in the model it is necessary to slide back a section of the false floor, which is in two sections so that it can be done.

I shall explain that there are obvious unessential differences between this model and the original incubator as, for example, the floor here is made in two sections of thin veneer wood, which is a convenient size. In the original incubator it was made of several sections because of the necessity of removing the floor to clean underneath. Also I have made no effort to obtain the same number of holes in the false ceiling and floor, deeming that beside the question, nor have I the exact size of those holes. They were put in to show the court the actual path which the air followed and in which respect it is non-essential to the successful operation of the Lawry incubator that there be a definite number of holes in either the false ceiling or floor. I might also add that the space between the false ceiling and permanent ceiling and false floor and permanent floor in the Lawry machine was about 1-3/4", which I could not keep to exact scale in the model for it would have reduced the space so considerably that it would hardly have shown at all. The purpose of the model is simply to illustrate the circulation of air and the method of operation of the Lawry machine, and conveniently to illustrate my testimony with regard to the original incubator. Likewise the top of this model can be lifted off so as to give a convenient view of the inside chamber and, of course, that was obviously impos-

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sible with the original machine. I also put in windows through which one may look and watch the actual circulation of air, as demonstrated with smoke. There were no windows in the original machine. I have the original Lawry fan present and which I can identify, but the fan in this model is a little tin affair I had built for its limited purpose. But, nevertheless, I wish to reiterate that air will circulate in this model in the exact way in which it did in the original machine and if you wish I will be glad to start up the motor and show the air circulation.

"BY MR. ELY: I object to that as having nothing whatever to do—we are talking about the Lowery machine at Pacific, Missouri, not some model which this witness has made, which doesn't conform in any respect—

BY THE WITNESS: Yes, it conforms in every essential respect.

BY MR. ELY: We will show that on cross examination."

I intend to show, by means of smoke, the circuit of air followed in this model and which will substantially illustrate the circuit of the Lawry machine. I will now mark the removable top of the model with the figure 11 and will begin by removing the top. An electric motor actuates the fan in the model, the current coming from three dry cell batteries. I will now mark the anteroom wherein those batteries are placed with the figure 12. I will ask some one person present to blow smoke near the aperture marked "9", which leads from the heating compartment through into the fan and you will see smoke drawn through and notice that it comes out at the end of the passageway leading from the fan into the space between the false

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and true ceilings, which will show that in operation the air will be driven by the fan into that space between those ceilings. As I have said, the top, or permanent ceiling of the model, has been left off so that this demonstration can be viewed.

(Whereupon the record shows that the witness started the motor and counsel for defendant blew cigarette smoke into the said opening marked "9")

When the motor was started we saw the smoke sucked readily from the heating chamber through aperture 9 into the fan and the smoke next appeared at the end of the air duct 3, which opens into the space between the false and permanent ceilings and which said opening I mark with the figure 13. I now replace the top, or permanent ceiling, marked 11.

The circuit of smoke, which I have just demonstrated, would be true of a similar demonstration if made at Pacific, Missouri, with the Lawry incubator in the condition it was at the time I saw it in 1916, and, likewise, air would follow the same cycle which could determine were air not invisible. In other words, air would, and does, follow the same path that smoke took in the demonstration.

I now propose to start the fan again with the cover, or permanent ceiling in place, and again circulate some smoke inside of the model. I will ask counsel for defendant to blow some smoke in the air immediately outside, or near opening No. 4, which represents the restricted intake opening in the original Lawry machine. I then expect the action of the fan to draw that smoke through the opening, then through the heating chamber, just as

the incoming air in the Lawry machine would have been acted upon, and next that the smoke will be drawn into the fan, forced through air duct 3 up through opening 13 and, now that the cover is in place, the smoke will be forced to find its way down through the holes bored in the false ceiling and into the incubator chamber, from where it will go on down through the holes in the false floor and thereafter through the opening from the space under the false floor into the heating chamber.

(Whereupon the motor of the model was started and cigarette smoke was blown by counsel for defendant near the opening, as requested by the witness.)

You will now see the smoke floating down so that the chamber has become diffused and full of smoke. All of which, of course, can be ascertained by looking through the windows of the model. We also see a small, thin, stream of smoke being expelled from the exhaust pipe. I will now recapitulate the last conducted experiment, beginning with the time when the motor driven fan started whirling the smoke from a cigarette, as blown near and into the intake vent, or restricted opening, marked No. 4. The fan set up a circuit of air, which passed from the heating chamber 8, through opening 9, and was then forced along through duct 3 and then up through opening 13 into the space above the false ceiling 9, then forced downwardly through holes bored therein and into the main egg chamber, in which the air was diffused, after which the air passed out of the incubator chamber through the holes bored in the false floor 7, and from thence it passed through opening 10 into the heating chamber and up through that chamber and over and around the coils

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placed therein, which, if they had contained steam, would, of course, have heated the air, and thence around through opening 9 to repeat the circuit just described. The action of the fan causes an area, or region, of low pressure near its center which, of course, accounts for the action of the air in moving through the opening. In other words, the low pressure region of the fan extends throughout the surrounding area and is the cause of a limited amount of air from the outside passing through the intake opening 4. In the demonstration just conducted the smoke from the cigarette blown into the air just outside opening 4, took the place of air and acted as it would have and did, and the only purpose of the smoke was to make the demonstration visible. That smoke was drawn through opening 4 in the manner which I have just indicated and made the complete circuit. Of course, the incoming air is compensated for by the air which passes out through the restricted opening 5, in which, as I have pointed out, the model is fitted with a small rubber tube.

"In our demonstration just concluded, we all saw a thin stream of smoke—

BY MR. ELY: I beg pardon; don't subscribe me to that statement.

BY THE WITNESS: In the demonstration just concluded I saw a small amount of smoke which I pointed out to all those who were interested in looking.

BY MR. ELY: You don't have to say that.

BY THE WITNESS: Emerging from the end of this rubber tube, taking the place of the outlet pipe in the original Lowery machine.

(Deposition of W. G. Lewis)

BY MR. TAULBEE: Who watched these two demonstrations just carried out, and which you have described in detail?

BY MR. ELY: Are you trying to get me to corroborate this witness? If you are—

A I assume that all those present in the room saw the demonstration.

Q Mr. Ely is present, and Mr. Aitken and myself, is that right?

A Yes, sir.

Q Did they approach the model and watch the demonstration?

A The (they) surrounded it.

Q Did they look into the windows?

A They did.

Q When you say that the smoke was going through—

A And the general expression at the time was that the chamber was full of smoke.

Q Did you employ any additional means to see that smoke in the chamber?

A In order to utilize the windows which we put in the model for that very purpose, I lit a match and held it outside of the window, and found better success by holding an electric bulb just outside the window to illuminate the smoke inside."

This demonstration proves that a definite current of air and smoke was circulated through the egg chamber, for otherwise they could not have reached the outside opening and been expelled from pipe 5, as we all observed.

When I saw the Lawry incubator in Pacific, Missouri, in 1916, the chamber contained egg trays and racks, although there was no setting of eggs therein. The racks

containing the egg trays were arranged at convenient positions on the floor and could be moved from place to place in the chamber as desired. The trays, of course, were carried in those racks in tiers, one above the other, and extended up as high as an ordinary man's head.

Had there been, during this demonstration with the model, similar racks and trays of eggs arranged in tiers, as in the original machine, the air circulating downwardly through the holes in the false ceiling would have affected all of the eggs alike, and would have diffused and circulated about them. The bottoms of some of the egg trays, which I saw at Pacific, were constructed of screen, while others were of perforated metal. With similarly constructed trays for the model, with which I have conducted this experiment, the definite current of air I have spoken about would have circulated down and around the eggs and through the trays, going from one rack to another in those tiers downwardly.

The Lawry incubator, during my first visit, had a damper in the air duct 3, which I did not attempt to duplicate in the model, as I regarded it as non-essential in the demonstration of the air circulation, and it was positioned about perhaps one third of the way from the fan to the end of the duct. Manipulation of this damper restricted the speed with which the air could be driven through the duct in order to regulate the circulation of air throughout the incubator chamber.

The very restricted inlet and outlet openings insure an amount of air entering and leaving the incubator which is very small with respect to the total current of air circulating inside the machine, which, if full of eggs, the evaporation therefrom would produce a considerable

(Deposition of W. G. Lewis)

amount of moisture in the air, which, in turn, is conserved, because of the very slow rate of change of air between the outer air and that in the incubator. In other words, a very small amount of air escapes through the tube and through opening 5, and it does so without undue loss of moisture.

I was told that in the use of the Lawry incubator at Pacific, Missouri, staged incubation was used. (Objection as hearsay.) In that respect I see no reason why such a method could not have been successfully carried out in the Lawry incubator and (Objection as calling for a conclusion), besides, it could be successfully done in this model. The eggs in the Lawry machine could have been placed in such relation that the youngest eggs would have been at the top with the older eggs progressively downward. The reverse also could have been done, that is, with the eggs in a later stage of incubation at the top. Likewise the eggs could have been placed in any relation as to their ages.

The current of air circulating in that part of the Lawry incubator, which corresponds to air duct 3 in the model, could have been measured with exactness, but it would have been more difficult to measure the same air when it was passing downwardly through the egg chamber, because the rate of motion there would not so readily have affected an airometer as when it was in the smaller passageway. However, in view of the fact that the Lawry incubator presented a closed circuit, it would follow that the same amount of air would necessarily pass through any cross section of the circuit at any point in the circuit, as at any other point. I did not mean, in my testimony

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this morning, to infer that this model, or Exhibit MM, was constructed exactly to scale in all its measurements with the Lawry incubator. The dimensions of the incubating room and heating chamber in the model, as to height, width and length, are 1-½" to the foot, but the model is not an exact construction of the Lawry incubator, but merely an approximation, although it produces the exact method of circulation of air as it was carried out in the Lawry machine. I do not mean this model is to scale in each measurement, or that it is to exact scale. The dimensions of this incubating room in the model and the heating chamber, the height and width and length, are 1½ inches per foot, that is, 1½ inches in the model represent approximately 1 foot in the original Lawry machine. I do not offer this as a model of exact construction but just as an approximation. I am handed a standard recording thermometer, which is the same one I saw during my first visit at Pacific Missouri.

(Whereupon said thermometer, above referred to, was marked for the purpose of identification as defendant's Exhibit NN)

It is a Schaeffer and Budenberg instrument, the top part of which was mounted on the wall of the anteroom of the Lawry incubator. I am handed a number of paper charts whereon the daily temperature is indicated by the said recording thermometer. I saw such charts in the Lawry incubator at Pacific, in 1916. These charts, which have a hole in the center for placing them in position on the face of the recording thermometer, are covered with concentric lines, which represent temperatures which are drawn by pen, which is a part of the instrument.

(Deposition of W. G. Lewis)

(Whereupon the above mentioned charts were marked for identification as defendant's Exhibit OO)

I will mark one of these charts on the margin with the figure 30, and whereon a red line, as is customary, indicates the temperature and which said chart is marked March 28, 1917.

I have seen many such thermometers used on Smith incubators. The chart just referred to indicated that for that particular twenty-four hour period there was a uniform and satisfactory control of temperature, running slightly below 100°. I have examined the other charts in this collection and while some of them are better than others as to uniform temperature, on the whole they show a very fine temperature record. Some of them are almost perfect, while others are not quite so much so, but when computed with the general run of incubator records I would say they are especially fine.

I am handed an object which I identify as the fan which was a part of and used on the Lawry incubator at Pacific, and it is the same fan which I saw there in 1916.

(Whereupon the above mentioned fan was marked for identification as defendant's Exhibit PP)

There is a chart still in place on this thermometer, dated 6-19-17, and is evidently the last chart that was used; it shows a very fine uniform temperature just under 100°. The highest temperature recorded on this one chart was in the region of 100°, but most of the day it ran just under that figure.

There is a good deal of controversy about what is the most desirable temperature range to maintain for suc-

(Deposition of W. G. Lewis)

cessful incubation, but, in my opinion, I would say a range from 98½ to 99½ or 99¾, is the most desirable. Temperatures over 100° are dangerous and would undoubtedly lower the hatch and injure the vitality of the chicks.

I have never been of the opinion that there is any necessity for a marked difference in temperatures at different stages of incubation, although it is customary in the trade to allow a higher temperature towards the advanced stages, especially in the use of the smaller still air type machines. If a temperature was maintained at less than 100° in the early stages of incubation and during the latter stages raised to 105°, serious damage would be done to the hatch. I determined conclusively by the operation of my 7500 egg incubator that a temperature of 103° seriously damaged the hatch and 105° would be very damaging if maintained for any considerable length of time. If the temperature went to 105° and was then immediately lowered, it would be certain to damage some of the weaker embryos, and the longer it was maintained at that figure the more serious damage it would do, and if for several days would necessarily result in a very low percent of hatch with chicks of such low vitality as to make them practically worthless. That is also true at any stage of the incubation process.

(Whereupon counsel for defendant offered in evidence as defendant's Exhibit MM, the previously referred to miniature model of the Lawry incubator.)

(Deposition of W. G. Lewis)

CROSS EXAMINATION

BY MR. ELY:

It is my understanding that the Lawry incubator was not operated after June, 1917. It was abandoned as an incubator, and I never heard of it on any of my trips after that year. I think it was abandoned. The walls and most of the incubator stands today as they did in 1916. A small section of the fan has been removed and the stove has been disconnected and has been tipped over by some heavy pulleys stored in the room, and also the thermostat has disappeared, but it would be entirely possible to recondition that incubator and again put it in operation. I did not attempt to recondition the incubator although it could be done without much difficulty. It is not my property. I have made no effort to operate it. To recondition the Lawry incubator would involve a very considerable expense, would necessitate a proposal and acceptance thereof by the present owners of the plant, and, of course, such a thing would be possible but I would not say with very little trouble. Instead of producing a model the incubator could have been operated, if we assume that we could have made a deal with the present owners and we thought it necessary to spend the time and money which would involve considerable expense and several weeks, if not months, of time. Such a thing could be done, I believe; that incubator will hatch chicks today, if you want them.

I have a good deal of interest in this case. I am familiar with the type of temperature charts that have been produced here.

(Deposition of W. G. Lewis)

"Q Do you know where the thermometer was located when that—what part of the chamber the thermometer was located in when those charts were made?

A I know where it was located when I saw it.

Q Do you know where it was located when these charts were made?

A These charts are dated in 1917 and I didn't see the incubator in 1917.

Q You don't know where the thermometer was when those charts were made?

A No, sir.

Q Where was the thermometer when you saw it in 1916?

A The clock part of the thermometer?

Q I am asking about the business end of it, the thermometer end of it, where was that located?

A I don't know what you mean by the thermometer.

Q Where was the temperature responsive element of the thermometer located?

A What we would term the bulb was located in the egg chamber near the top of the room and pretty well towards the right-hand side, as we entered the door. My sense of direction in Pacific is turned around and I hesitate to say—

Q How was it located—

A It would be located— I don't know how to tell any better.

Q How would it be located with respect to the point where the air intake duct discharged into the ceiling?

A It is on the same side, about midway of the room.

Q Well, it is on the— .

(Deposition of W. G. Lewis)

A Pretty well toward—up against the ceiling.

Q Up against the ceiling and towards the side wall? A Towards the side wall, that side on which duct number '3', as marked in our model, opened into the space between the false ceiling and the permanent ceiling.

Q Then the thermometer was located directly below the inlet duct?

A The thermometer bulb was.

Q That is the point where the reading was taken, where it was recorded on these charts?

A That would be the point at which the temperature would be recorded, yes."

I made measurements of the Lawry incubator December 9, 1930. I had not made any measurements before. The model was made in the fall. After seeing the Lawry incubator I carried in my mind what I thought were its measurements, and the model, as I have before stated, was made from memory for the purpose of illustrating the direction of air currents. I also visited the Lawry incubator in the summer of 1930, just before this model was made and I studied the incubator very carefully at that time. As I have said the model is approximately in proportion to the original incubator. The Lawry incubator is 7′ high, 17′ 9″ long and 14′ wide. You understand that I visited this incubator in the summer of 1930, in August, and after studying it carefully went home and had this model made up immediately.

"Q But you didn't measure it in August, 1930?

A I didn't measure it with—

Q You didn't measure it with anything?

A Not with any exact measuring instrument.

(Deposition of W. G. Lewis)

Q You didn't measure it with any instrument at all, not even a ruler?

A No, I didn't need to."

I would say that the space between the permanent and false ceilings of the Lawry incubator was about 1¾". I did not measure the thickness of the false ceiling. The chamber in the Lawry incubator was, as I have stated, 7' in height and the space the air was supposed to pass through was about 1¾". In the model the chamber is shown as 11" high. If I had made the model in the same proportion as the original Lawry installation that same space between the two ceilings should have been slightly over 2/10th of an inch instead of the 1" which I allowed on the model. Holes in the floor were slightly larger than in the ceiling, although I did not measure them. The space between the two floors was the same as between the two ceilings.

"Q You have got the same disproportion in your model as you have in the ceiling?

A I would have to measure that to find out; I didn't regard that as essential for the purpose for which this model is constructed; in fact, this morning, I called attention to the fact that if we had made the space so small as to keep it in proportion, the model would be inoperative; we wouldn't be able to drive the air around through the model, through the space of one-fifth of an inch. It is approximately one inch."

The floor of the Lawry incubator was in sections, and I did not lift up one of these sections when I visited the incubator.

(Deposition of W. G. Lewis)

"Q How do you know there is this hole underneath the floor in the corner by the heater room?

A The outlet duct is very plainly shown, both in the heater room and in the incubator room.

Q You have got this hole back in the heater room underneath the floor; how do you know there was a hole underneath the floor, underneath the heater room, in the Lawry machine?

A Because there is a duct very plainly shown in the Lawry machine leading the air from underneath the false floor back into the heater room.

Q Then as far as you know—how did you know there was a hole, such as you have illustrated in your model, beneath the floor leading into the heater room?

BY MR. TAULBEE: Object to that as repetition.

Q How did you know that?

A There is a duct very plainly shown.

Q I asked you how you knew there was a hole?

A I saw a duct.

Q You didn't see such a hole as this?

A I saw the duct leading beneath the false floor.

Q How did you see the duct when you didn't raise the floor?

A It isn't under the floor.

Q It isn't the way it was made in Pacific?

A I have put no duct in this model.

Q Then this model doesn't show the Lawry incubator?

A The model shows the air passing from underneath the false floor into the heater room, and it does it in the incubator.

(Deposition of W. G. Lewis)

Q In the demonstration you made with this model, you have a hole from underneath the floor into the heater room; now, you say the Lawry machine had no such hole?

A I said in the Lawry machine there is a duct leading the air from under the false floor into the heater room.

Q Is that duct shown in this model?

A No, sir, the opening you are calling attention to there takes the place of the duct.

Q The opening I called your attention to was not in the original Lawry machine; that is a fact, isn't it?

A No, sir, it is not a fact; there is an opening, not exactly like this; I have already stated there are numerous small and inconsequential differences between this model and the Lawry machine; the Lawry machine had a duct opening from the space between the false floor and the permanent floor and leading into the heater room; I did not build a duct in this model, but made an opening in its place.

Q You built a duct for the fan, didn't you?

A Yes, sir.

Q Did you make that duct exactly like the duct in the Lawry machine?

A For all essential purposes like it.

Q As a matter of fact, doesn't that duct extend clear around to the corner of the room?

A I believe it does.

Q You haven't made this model like the Lawry machine in that respect?

A No, it doesn't extend as far towards the end of the room as it does in the Lawry machine.

(Deposition of W. G. Lewis)

Q You haven't shown the outlet duct at all in this model?

A No, sir."

When I saw the Lawry machine, the heater room contained the heater, thermostatic attachment, heater coils and the tube for the Blau gas. The loose piece which I am shown was simply intended to show that the floor continued over in that direction.

"Q Is there any hole in the floor of the heater room in the Lowery machine?

A There is an opening from this air duct into the heater room the Lowery machine.

Q You haven't shown that in this machine, have you?

A No, I didn't show the duct leading the air out; I simply left an opening there from under the floor into the heater room."

Had I made the holes in the ceiling and floor of the model in proportion with the Lawry machine, which we will assume to be ¾" in diameter, those holes then would be approximately 1/10th" in diameter with the holes in the floor about one third larger. Upon that assumption, and to be in proportion, the holes in the floor of the model would be between twelve and thirteen one-hundredths of an inch in diameter. They were not made to scale because I did not deem it at all essential. But, had they been, I could have obtained just as effective a circulation if I had installed a more efficient fan, or a fan that was relatively as efficient as the fan which was actually used in the Lawry machine. The model has only a toy motor operated on three dry cells, which, of course, has a very limited amount of power and uses for a fan merely

(Deposition of W. G. Lewis)

little flat paddles, not curved nor expected to show the efficiency in driving the air that this fan would that was used in the Lawry machine. Also I did not deem it necessary to put so many holes in either the floor or the ceiling as there were in the Lawry machine. And, if we knew the exact number in the latter, it is entirely possible that the total area in those openings would be a little short, but not so far from the proportion indicated by the reduction for this model.

I do not know how wide the space was into which the horizontal air duct discharged air in the Lawry incubator, but, regardless, it would have no effect whatever on the direction, or the fact that the air flow follows a predetermined circuit. It would have an effect on the speed of the flow and the speed with which the air was delivered into that space between the ceiling and the false ceiling.

There was a sail or damper in the pipe of the Lawry incubator as it led from the fan and which feature I did not show in the miniature model because I was only determining that the air followed a predetermined definite path, and I was making no effort to show the speed with which it travelled, in proportion with the original machine. I believe there was also a beam located in the air duct of the Lawry machine, which I have likewise not shown in the model. Of course, any obstruction in the air duct would cut down the speed of the air. I did not notice the horsepower of the motor in the Lawry machine in 1916.

In 1916 I was travelling for Dunn and Company, publishers of educational text books and I visited high schools and colleges in the interests of that company. It was

(Deposition of W. G. Lewis)

purely a matter of personal interest that caused me to visit the Yesterlaid Egg Farm. As I have explained, I was interested in poultry, and during my teaching some of my physics students had built these incubators, as I have explained to you. I likewise visited the Missouri Poultry Experimental Station at Mountain Grove, and numerous other poultry farms as well. I did not return to the Yesterlaid Egg Farm, after my visit in 1916, until the year 1930, at which latter time that farm, which was located right at the edge of Pacific, Missouri, had been discontinued. The Lawry incubator was operated as a part of that farm and located in the Pacific Refrigerator Company's warehouse and, of course, not on the farm's property.

As to what amounts to a successful hatch, I would say that when I first started operating the Commercial Hatchery I produced many hatches ranging from 30 to 40 percent, which was good enough to justify us operating, although not very profitably at that time. For several years thereafter I considered 50 percent a very excellent average, but with the past few years I, as well as other operators, have learned many refinements and more about egg supply and the obtaining of satisfactory egg supply and how to operate the incubators, and all the details of hatchery management, so that if we obtain less than 60 percent we consider that hatch unsatisfactory and, of course, some hatches reach a higher percentage than that.

I revisited the Lawry hatchery in August 1930, to refresh my mind with facts concerning the incubator, but I did not communicate those facts directly to Mr. Robbins, although I talked with a number of people, including

(Deposition of W. G. Lewis)

Parkinson and Lane. To my memory, I didn't communicate them to Robbins at all. I am not sure but I think I also spoke to Mr. Jandeburr. I did not tell Mr. Robbins, or anybody connected with him that foul air was vented through restricted openings in the ceiling of the Lawry incubator, because that is not a fact.

"By Mr. Ely: Now, in view of the witness' testimony I renew my objection to the receipt in evidence of the model MM as obviously not a replica or reproduction of the Lawry installation, and I object to all testimony that were conducted on this model and to all tests with regard to any tests."

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

By "culling of flocks", now very common in the poultry business, and was followed at my hatchery, is meant the rigid practice of sending out men to handle each bird in the flocks from which we plan to buy eggs for hatching and to examine those birds very carefully for standard disqualifications, any evidence of low vitality, or any marks which might in any way make them unfit for satisfactory breeders, so that those hens may be rejected from the flocks which furnish us our eggs. The eggs obtained from culled flocks are distinctly better in hatchability than those taken from unculled flocks, and this factor accounts in part for the increased success in the hatching industry. The attention of the industry has been directed to the culling method very generally, articles on culling have been published in all poultry journals, agricultural colleges give it considerable attention in their instruction courses, and poultry schools over the entire country emphasize the

necessity and importance of culling. It represents one of the factors which undoubtedly have improved hatchability generally. When I said on Cross-Examination that it was my understanding the Lawry incubator had been abandoned in 1917, I meant that the machine stood there just as it was last operated; it was my understanding that the Lawry incubator had not been operated for commercial hatching since 1917, although I do not, of my own personal knowledge, know whether it had been used or not since that date, nor do I know whether the men originally interested in that incubator are still interested in it and intend to operate it some day.

RE-CROSS EXAMINATION

BY MR ELY:

It is a fair assumption that the chart on the thermometer indicates the last day on which the incubator was operated commercially. The date on that chart is 6-19-17 and it might have been operated experimentally since that time and the thermometer not used, but I know nothing about that.

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

I also do not know whether another thermometer may have been used subsequent to the last time this one was utilized.

(Whereupon, at the request of counsel for plaintiffs, counsel for defendant agreed to produce the model incubator, defendant's Exhibit MM, at Cleveland, Ohio, where and when rebuttal proofs would be taken by plaintiffs herein.)

(Deposition of Gordon A. Scott)

GORDON A. SCOTT,

of lawful age, being produced, sworn and examined on behalf of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 51 years old and reside at Seymour, Indiana, where I have been a Chiropractor for a little over five years, having previously studied two years for that profession at Davenport. Prior to all of this I had resided at Pacific, Missouri. I was in California for two years and then returned to Pacific for a while. I had known Mr. Lawry before going to California and through correspondence he told me about this incubator he was getting started and said he wanted me to join him as assistant manager of the Yesterlaid Egg Farm. I then had had no experience in incubation. I decided to accept his offer and returned to Pacific, Missouri, in June, 1916, where I saw Mr. Lawry and made arrangements to take over some land on the farm. Later I bought five acres and built my home. I started to work in September, or October, of 1916, but before I went to work I saw the Mammoth incubator a number of times at the Pacific Refrigerator Company's plant and I worked in it beginning with the spring hatch season of 1917.

My first sight of the Lawry incubator revealed a large room in the basement of the Refrigerator Company' plant, with a vestibule entrance 5 by 8 or 10′ in measurement. There was a door out of this vestibule to the left into a heating room about of equal size and directly in front of the vestibule entrance was the door to the incubating room, which was about 17′ or 18′ square, as near as I

(Deposition of Gordon A. Scott)

can remember. There was a false floor and ceiling with a space between the latter and the permanent ceiling of about 6" to 8". I never actually measured it; it may have been more or less. The incubator contained a heater and coil pipe and circulating system that heated the water with gas for fuel and a thermostat. The heat was sucked in through an opening by a fan and thence into a wooden channel which carried it to the right and top of the incubating room, and above the false ceiling and from there the air took its natural course through the holes in the false ceiling, it allowed the air to circulate or spread naturally on a downward course, this heat being driven in through there. The air and heat emitted from this channel was emitted above the false ceiling and went down through the perforations in the false ceiling. The false floor had numerous perforations in it and all of the air went through those to be carried into the outlet in the right-hand corner, which led into the heating room, or the air could be turned either way.

"Q Is it your understanding that air would be heated again and recirculated?

A Yes, sir.

By Mr. Ely: Object to the leading questions."

There was a means provided whereby air could be taken into the heating room of the incubator from the outside, which consisted of a small opening through a galvanized pipe, and which could be opened or closed by a damper. I do not remember the diameter of the pipe or whether there was an outlet vent from the heating chamber or not. When I first arrived at Pacific the hatching season was just about to close, but I saw the Lawry incubator

(Deposition of Gordon A. Scott)

in operation with a setting of eggs therein. At that time the eggs were placed in wire bottom trays, holding seventy-two eggs, and the trays were placed in a rack with a space of four or five inches between, and one over the other with about twenty trays to the rack, and a number of those racks in the room. Mr. Lawry told me that the incubator held between ninety and one hundred thousand eggs and, in my judgment, I would estimate that to be about the correct number.

I remained at the Yesterlaid Egg Farm at Pacific until the fall of 1923, but we last used the Lawry incubator, for hatching eggs, during the spring of 1917 and during which year I think about six or eight hatches were taken from the machine. I don't think it would be under six. The percentage of run of each hatch was from fifty-five to sixty-five, which was very good at the time. I know fifty to sixty percent was considered good in large hatcheries. On the Yesterlaid Egg Farm there were no incubators in use when I was there, they had been taken down. The chicks hatched from the Lawry incubator were sold commercially and shipped all over the United States, and were sold for hatching stock and a large number of the cheaper or farm run eggs were sold to the ten cent stores.

I was assistant manager in 1917, attended to some of the office work, booking and shipping of chicks and also worked in the incubator, in the turning of eggs and keeping of records. The main reason why the Lawry incubator was not operated commercially for the hatching of chicks after the hatching period of 1917 was the fact that the price of the gas we used more than doubled; the help

which we had been able to hire at the rate of seven or eight dollars a week had been drawn from us by the railroad yards, which began to pay four dollars per day due to war conditions and we slowed up at the plant and did custom hatching with the farmers. We then had no intention of abandoning the incubator, as we considered it absolutely successful. I do not know whether it was difficult to get the Blau gas at that time, but the price of it kept rising. I don't think there was any shut down on the supply. This made it difficult to operate the incubator commercially with a good profit.

We intended to resume the operation of the Lawry incubator after the war, but Mr. Lawry left Pacific, Missouri, in the fall of 1917, and I left in 1923.

I have stood in the incubator chamber of the Lawry machine while the device was in operation and air circulating therein from the power driven fan through the channel and over and through the false ceiling and downwardly through the chamber. You could always feel that air. You could feel a slight current of air, very slight, but you could feel the warm air coming down on your head.

Hatching was carried on in that incubator with the eggs in trays and the trays in tiers with eggs in staged incubation. That was true when I got to Pacific in 1917, and I took out a number of chicks and packed them in the shipping boxes right in the incubating chamber. I have no interest in this case at all.

(Deposition of Gordon A. Scott)

CROSS EXAMINATION

BY MR. ELY:

I first saw the Lawry incubator at Pacific, Missouri, in June of 1916, and at which time the last hatch of the season was being taken out. I did not go to work in the incubator until the season of 1917.

"Q Now, are you very clear about how the air got out of the incubator room?

A I know that it got out through an opening in the bottom, what I would call the righthand side; I was standing in there facing the door; the opening was right at the heating room.

Q Near the left hand—

BY MR. TAULBEE: He was facing the door, he said, from inside.

BY THE WITNESS: I don't know why I had it in my mind when you questioned me—I was thinking of standing like this (indicating) and it went out over there (indicating)

Q At the opposite side of the room from where the duct that let the air in above the false ceiling was?

A Yes, sir.

Q Went out at the far corner?

A Yes."

After leaving the incubating room the air was conducted by a pipe and there was also a pipe that led outside.

While standing in the incubator room I could feel a very slight, although perceptible, current of air on my head. I wouldn't say for sure whether I could feel the current with my hand in the center of the room. I don't know as I ever tried that. I never noticed it. We gen-

(Deposition of Gordon A. Scott)

erally worked in the incubator, during the year of 1917, in a pair of cotton pants and slippers, that is all we had on. We had no more trouble with eggs not pipping in the Lawry incubator than is common in hatching. Sometimes the eggs would not pip so well as at other times and that is the reason for our variation in hatches; sometimes 55, 65, 68 or 70 percent. Later in the season, due to the infertility of the eggs, the hatches were smaller, but I do not think that was in any way due to the heat of the surrounding countryside. It was cold around the outside of the Lawry incubator, due to its position in the cellar of that plant.

We made no effort to obtain a substitute for the Blau gas when it began to get expensive near the end of our hatching season and we figured we could take care of that another year but we didn't. After 1917 we did not hatch in the Lawry incubator, the Yesterlaid Egg Farm continued to operate. Mr. Lawry retained his office as President of the Yesterlaid Egg Farm but acted in an advisory capacity. It was about 1920 that he severed his connections with the company.

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

George Ruede helped me to operate the Lawry incubator during the season of 1917. He worked nights and I handled the incubator during the day. Not all of the air went outside after leaving the incubating chamber, but was expelled into the heating room, but I do not know the respective percentages.

Exhibit NN is the same thermometer that was actually used with the Lawry incubator and the temperature charts

(Deposition of Frank E. Miller)

produced are the ones that recorded our results and were used in connection with the thermometer. I am shown the fan, defendant's Exhibit PP, which is the same, or very similar to, the one employed on the Lawry incubator and I last saw it in the incubator room.

"Q I will hand you two trays and I will ask you whether you have ever seen anything similar to those before?

A Yes, sir.

Q Where?

A In the incubator.

Q Is this the type of tray that was used on the Lowery incubator?

A It looks like some of the same trays."

(Whereupon counsel for defendant introduced in evidence the above mentioned two egg trays as defendant's Exhibit QQ)

FRANK E. MILLER,

of lawful age, being produced, sworn and examined on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I live at Richmond Heights, Missouri, and was formerly employed at Pacific, Missouri, beginning with the year 1916, by Rolla Lawry. I had then no previous incubating experience. Mr. Lawry, at that time, was managing the Yesterlaid Egg Farm, near Pacific, Missouri. I did not work on the farm but was employed in and about the incubator at Pacific and my duties consisted

of such things as candling eggs and putting them in the incubator. The incubator was located in the basement of the ice plant. I do not remember the exact month I went to work in that incubator, but it was prior to Easter of 1916.

The incubator consisted of a large room with a false floor and false ceiling, with holes bored every so often, and with a fan forcing the heat from a little room on the outside up through the ceiling by means of the fan through a kind of chute, and, to the best of my memory, there was a suction fan that sucked it through the floor so that it came in through the top of the incubator and went out at the bottom. I remember that. I worked in there and the heat always came down on me in a sort of draft. Whenever I had occasion to go into the egg chamber of the incubator I could feel a downward circulation of air from the ceiling. I would not say for sure, but I think an electric motor actuated the fan. There was also a means for heating the air which was circulated and which consisted of a kind of gas burner, or at least the gas came in gas tanks. I do not know what the gas was called.

As I said, my duties consisted in putting the eggs in the incubator, turning them, taking care of them and then taking them out.

At first, the first opening of the incubator, we incubated eggs in cases; we had screens for separators in those cases, and about three days before the hatch was due we took them out and put them in trays. Later on we hatched in trays only, arranged in tiers, one above the other. I am not sure, but I believe that incubator held about one

(Deposition of Frank E. Miller)

hundred thousand eggs. It has been a long time ago and I do not remember, but it seems to me that is what I heard them say.

The first hatch which I saw come out of the incubator, occurred about one month after I went to work. It is a long time ago and I do not remember the time I went to work there. I remained employed there about one year, but I cannot approximate the number of hatches that were carried on because we were putting in new ones and taking out all of the time; that is, we never had a full hatch at one time, some of the eggs would be three days old, some would be coming off and some would be a week old. Eggs in different stages of incubation were in the egg chamber at the same time. The chicks which we hatched in the Lawry incubator were healthy looking and some of the Easter hatching were sold to the dime stores, at least that is the information that was given to me by Mr. Lawry and he had quite a few pedigreed chicks of his own that were hatched in that incubator. I was informed by Mr. Lawry that some of these eggs cost one dollar and a dollar and a half apiece.

During the operation of the Lawry incubator the hatchery at the Yesterlaid Egg Farm was not in operation, and all of the hatching was done in the big incubator, because it was successful and I understood from Mr. Lawry that it showed a better percentage of hatch than was obtained from the incubators on the farm. (Objected to as hearsay.) Mr. Lawry told me that we were obtaining from the big incubator between 55 and 60 percent of hatch. (Objected to as hearsay.) In pulling the trays out with the hatched chicks therein, I did not count the

(Deposition of Frank E. Miller)

number of chicks in a tray, but I would say that more than half of the eggs had hatched out. I don't know how many eggs a tray contained.

Defendant's Exhibit QQ is the same kind of trays which we used in the Lawry incubator, but, as I have explained, we used regular egg cases at first. The trays consisted of a wooden frame and wire mesh bottom.

I have seen similar charts to Defendant's Exhibit OO, which we used in conjunction with the thermometer, defendant's Exhibit NN, and were to indicate the room temperature. I had nothing to do with these charts or paid any attention to temperatures, as Mr. Lawry removed them. My instructions were to watch the thermometer and see that an even temperature was maintained. I think the desired temperature was 98 to 99 degrees, and we actually attained that temperature and uniformity. We had other thermometers hanging on the wall of the incubator and also would lay thermometers on the egg trays quite often. I would say that we used between 15 and 20 thermometers altogether and the object of so many was to attain a temperature comparable with the reading from the big thermometer. In other words, we desired to attain an even temperature and which thing we did actually accomplish and that was true during the entire hatching season while I was there. I am not sure that I ever saw the fan, defendant's Exhibit PP.

I have examined the wooden model of the Lawry incubator, defendant's Exhibit MM, and the said model represents the principle of the Lawry incubator, although the floor and roof were in sections instead of one piece. There was a false ceiling perforated like this one. There was

(Deposition of Frank E. Miller)

an outlet from the chamber but there were no windows in it, as in the model, which led into the elevator shaft in the building. That was an air outlet; if it got too hot we could cool it off; on several occasions but I did not pay any particular attention to the construction of it, as my duties did not include that.

"Q. Do you think this is a substantial reproduction—I don't say exact, but a substantial reproduction of the Lowery incubator?

A. Yes, sir.

Q. And does illustrate the essential points, as you understand them, of that incubator?

A. Yes, sir."

The tiers of egg trays were built all around the wall with some movable ones in the center, which could be shoved about and so arranged that each of the trays could be reached by me while working in the incubator and it was necessary to occasionally tilt or turn the eggs. I used to put one tray over the top of another one and turn them. We would carry on our work by going around the tiers in the center, which could be pushed about as they were on wheels. There was room between the various tiers.

CROSS EXAMINATION

BY MR. ELY:

The tiers would be shoved about to provide us plenty of room and light. I operated the incubator with it full

(Deposition of Frank E. Miller)

of eggs and I don't remember when I went there. I do remember working there Easter. To the best of my recollection there was an air outlet from the egg chamber into the basement, but I do not know whether it went out of a pipe into the basement. Sometimes, when it got too hot in the incubator room, at times we had trouble with it getting too hot, we would leave the ventilator open for a short period and also when we had a large hatch coming on, it seemed as though the eggs helped heat the place, but I never saw it get over 102° in there. We worked only in pants and shoes. It was never hotter in some parts of the incubator than in others. Upon this point I have a good recollection. I removed the false ceiling in the Lawry incubator as it was necessary to clean it of dust and stuff off the chicks, but the down, broken egg shells and fuzz on the chicks would go down through the floor where they would have to be taken out. To the best of my memory, the space between the false and the permanent floor was four or six inches, but I don't know. Mr. Ruede worked in the incubator at night and I worked in the day time. We would put in a tray containing maybe fifty or one hundred pedigreed eggs, but I never kept count of the chicks which would hatch. I worked in the incubator for one season and left there in the last part of 1916. I was working there Easter. I started before that, but I don't remember when. I finished out the hatching season. After leaving Pacific, Missouri, I went to work on the 'Frisco railroad.

(Deposition of Robert Schuchard)

ROBERT SCHUCHARD,

of lawful age, being produced, sworn and examinel on the part of the defendant, deposes and says:

DIRECT EXAMINATION

BY MR. TAULBEE:

I am 49 years old, reside at Pacific, Missouri, where I am manager of the Pacific Refrigerator Company. I have had no incubating experience and have never observed an incubator in operation only what I saw there during the hatching year they had that in my plant and which said incubator was owned by the Yesterlaid Egg Farm, of which Mr. Rolla Lawry was manager. That incubator was built in the winter of 1916 by Mr. Lawry and some carpenters. My duties around the Refrigerator plant required my presence there every day. The incubator was located in the basement of the plant and I believe it was completed in January, of 1916, and first put into operation in either January or February, very soon after it was completed. I went down a number of times to look at the device.

The incubator consisted of a room with a false floor with ducts around the side and ducts around the top of the ceiling and a return duct coming out of the bottom, with a fan operated from an electric motor, located in the heating chamber where there was also a set of water coils with the heater in connection therewith. Gasoline was used first, but that was a little troublesome, Blau gas was employed next. I actually saw the incubator fan operate and it would take the warm air out of the heating chamber, force it around through the air duct, down through the holes in the false ceiling, down through the

egg chamber, through the holes in the false floor and back into the heating chamber through a duct and would be used over and over again until the air got too foul. The air would be collected by the fan and recirculated, after being reheated, and after a certain amount of fresh air had been added to it, which was regulated by a damper located in the front top of the heating chamber. I stood in the egg chamber a number of times watching the operators take out chicks and I noticed a current of warm air coming down over me from the false ceiling and which then went through the holes in the false floor.

Eggs were first hatched in cases; they had a lot of cases made; afterwards they changed to racks that were put up all around the room with aisle-ways between. Some of the racks were in the center of the room with aisle-ways which provided sufficient room for the men to go through and also to place and turn eggs in the trays.

I saw some of the chicks being taken from the hatching trays and they were shipped to different localities. I only know what Mr. Lawry told me about the percentage of hatch obtained and one time he said it amounted to as high as 80 percent, then again 50 percent and he got down as low as 30 percent. I also heard Mr. Lawry say that the chamber contained 100,000 eggs.

I have seen the thermometer, marked defendant's Exhibit NN, before, I took it off of the wall and it is the same instrument which was used while the incubator was in operation. I removed it from the incubator wall yesterday afternoon and brought it up here with me last night. Until that time the thermometer had never been removed from the wall of the incubator.

(Deposition of Robert Schuchard)

(Whereupon counsel for defendant offered in evidence as defendant's Exhibit NN the above referred to thermometer.)

I also brought with me the fan, marked defendant's Exhibit PP, which I removed from the incubator and where it had been since the incubator was operated.

(Whereupon counsel for defendant offered in evidence, as defendant's Exhibit PP, the above referred to fan.)

I, likewise, brought with me the two egg trays identified as defendant's Exhibit QQ and which were obtained from the incubator where they have been since it was in operation. Likewise, I brought with me the temperature charts, marked defendant's Exhibit OO, and which have been hanging on the wall of the incubator all of these years.

(Whereupon counsel for defendant introduced in evidence respectively as defendant's Exhibits QQ and OO the above referred to trays and charts.)

I have today examined the miniature model, defendant's Exhibit MM, which fairly and substantially represents the construction of the Lawry incubator at Pacific, Missouri, and for a model it looks a good deal like the Lawry incubator. I have observed its various features and they represent substantially the features of the said Lawry incubator.

I believe the last hatching in the Lawry incubator occurred in June 1917. I do not know why the incubator was discontinued as I was not connected with it closely enough in a business way to know that. I have since been using the incubator room. Mr. Lawry left Pacific in the fall of 1917 and is now in New York City.

(Deposition of Robert Schuchard)

CROSS EXAMINATION

BY MR. ELY:

I have used the Lawry incubator room since its operation in 1917 for drying and candling eggs, but I have never used it for an incubator. The incubator is owned by the Pacific Refrigerator Company.

I remember that I testified in the case of Buckeye Incubator Company and Samuel B. Smith vs. William F. Hillpot, at Trenton, New Jersey, but I do not remember the year. I believe it was in May 1927. I testified in that case that I did not think the Lawry incubator was a success. I expect if they have got that down, that is what I testified. I also testified, in answer to the following question: "Were you in position to know about its operation?" as follows: "Not in particular, no; I was there, but I never had any dealings with it; that is knowing whether it was a success or not. It undoubtedly was not; otherwise he would have continued." I do not wish to change my testimony in that respect. The following questions and answers were directed to and made by me:

Cross Question 22: "He testified that when he started to run that he was using a sort of compressed gas for fuel that they call Blau gas, do you remember anything about that? Answer: Yes."

Cross Question 23: "And then he had to stop using it because he could not get any more gas for fuel; do you recall that? Answer: I recall that, but I do not think that is true. The first heating he began to do was gasoline, and then he turned over to the Blau gas because it was not so sensitive to regulate it."

(Deposition of Robert Schuchard)

I also testified in regard to Mr. Lawry that he would come into my office and take a seat and say: "I got off a certain percentage of hatch today. He told me one time eighty per cent and later on he would have the blues and would not get over thirty to forty per cent." I don't wish to change my testimony in regard to the above, but I don't know whether Mr. Lawry actually quit, but that is what he said in my office.

"Q It is true he did get the blues and quit?

A I don't know whether he exactly quit, but that is what he said when he was in the office."

I cannot say whether you would call the work done by Mr. Lawry during this whole period as experimenting, and I don't know what I would call it, because, so far as that goes, all of life is an experiment. Mr. Lawry was hatching eggs; I know that. If I told Mr. Ely, at Pacific the other day when he talked to me, that Mr. Lawry was experimenting all of the time, I meant it in the way that life is an experiment all the way through and I expect Mr. Lawry is still doing it today. He was experimenting during that whole period, if you want to call it that.

I remember testifying in answer to cross question 32, page 133 of the record, "He did not tell me; but all indications showed that it was a failure, but that is something I could not say; that is my own opinion." That testimony is true today and I would so testify, but I don't know whether Mr. Lawry would be called a failure or not, but I won't change that testimony as I gave it in 1927.

I remember that Mr. Lawry buried several apple barrels full of eggs which came out of the incubator. I remember that Mr. Ruede worked in the incubator and

(Deposition of Robert Schuchard)

I told these gentlemen about him when they were at Pacific the other day, but I never paid any attention to what they said to Mr. Ruede.

If I remember it was a three quarter horse power motor that actuated the fan using alternating current. I have not measured the model, Exhibit MM, so I could not say whether it is in proportion.

"Q Now, as I understand it, Mr. Lowery got discouraged over some of the hatches, did he not?

A Yes.

Q Got the blues?

A I expect he did; lots of us do.

Q He got the blues over it, didn't he?

A I don't know whether you call it the blues, or not; he didn't feel any too well about it."

I can't say that his hatches got any worse as the season went on, as I did not keep any tab on it, and was not connected with the incubator. I had an arrangement with Mr. Lawry whereby he paid me $100.00 a year rental for the space occupied by the incubator and it was further agreed that the rent was to eat up the cost and after ten years the incubator would become the property of the Pacific Refrigerator Company, and it now belongs to me and I could use it as an incubator or anything I saw fit to use it for. Mr. Lawry made that arrangement because he did not want to put up the cash. I cannot say that he considered the incubator as an experimental proposition and I cannot say that he intended to retain ownership of the incubator after the ten year period.

"Q The arrangement was you were to let it run on for ten years, then the incubator was to be yours?

(Deposition of Robert Schuchard)

A Run on for ten years and he would pay us rent after the thing was paid for.

Q He never did?

A He never run it long enough; he got in some other business."

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

In regard to Mr. Lawry having the blues I also at times saw him encouraged and even enthusiastic and such feelings were due to the success of his incubator in hatching eggs.

I made some measurements in the Lawry incubator yesterday morning and I have made notes and memoranda in regard thereto.

(Whereupon and as stated by counsel for defendant, due to the necessity of closing these depositions and the desire of counsel for plaintiffs to leave on a certain train, there was at this time, and without further discussion, offered in evidence as defendant's Exhibit RR the above referred to notes, data and memoranda of measurements made by the said witness.)

When Mr. Lawry appeared discouraged I do not know whether it was due to his business or to other factors. It was during the early part of the year 1916 that he expressed such feelings to me. Mr. Lawry first used cases and then afterwards used trays with mesh bottoms to contain the eggs in the incubator. I know that better results were obtained by the use of the trays than by the use of the cases. As I said before Mr. Lawry came to the office and said he had a hatch as high as 80 percent.

(Deposition of Robert Schuchard)

RE-CROSS EXAMINATION

BY MR. ELY:

"Q Then that eighty per cent was the first part of the season?

A That was along about the second or third hatching.

Q Do you remember he said later he had thirty or forty and got the blues?

A Yes, sir.

Q You remember testifying that way?

A Yes, sir."

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

I do not know what accounted for Mr. Lawry's blues.

FURTHER CROSS EXAMINATION

BY MR. ELY:

Mr. Lawry was blue about his incubator.

FURTHER DIRECT EXAMINATION

BY MR. TAULBEE:

We all get blue occasionally and in spite of those conditions Mr. Lawry continued to operate his incubator throughout 1917, and I saw many chicks hatched from it which were sent out and disposed of.

I still operate the Lawry device for drying eggs and began that when Mr. Lawry had accomplished his last hatch. I place eggs in the chamber of the incubator and circulate air downwardly over them by use of the fan and that is no different from the operation of the incubator when it hatched chicks, except that then heat was used. That practice very successfully dries eggs and we are still using it.

(Deposition of W. G. Lewis)

I know, as a matter of fact, many bad eggs result from incubation in all incubators, although I have had no experience with such.

FURTHER CROSS EXAMINATION

BY MR. ELY:

I saw Mr. Lawry bury some eggs, but I do not know how many.

When I used the incubator room for drying eggs I took the case off the fan and the last year or so turned the fan around, because I didn't have so many eggs to dry. I dried the eggs out. I got no chicks from the eggs I dried out. I applied no heat to the air.

W. G. LEWIS,

recalled.

DIRECT EXAMINATION

BY MR. TAULBEE:

It is a fact that during the operation of various types of incubators considerable numbers of bad eggs result. At my Lincoln hatchery we keep trucks for no other purpose than to haul off eggs that do not hatch and we still consider it a most successful year. Bad eggs result possibly from the incubator itself and the operation of it and when I hauled off many tons of eggs I was using both Smith and Robbins machines, but more bad eggs resulted from the use of the Smith machine than from the Robbins and yet I considered it a very successful year.

(Thereafter follows the notarial certificate under which the preceding depositions were taken.)

(Deposition of Rolla Lawry)

The following deposition of ROLLA LAWRY, a resident of Port Chester, New York, was taken at the City of New York, New York, on the 12th day of December, 1930, with the same appearances for the respective parties.

ROLLA LAWRY,

having been called as a witness on behalf of the defendant, and having been first duly cautioned and sworn to testify to the whole truth, deposes and says:

I am 46 years old, reside at Port Chester, New York, and am operating executive of Neat, Inc. I was a graduate in 1910 of Cornell University where I took a scientific course, specializing in agriculture, and, during which course, I incubated eggs with 10 or 15 different makes of incubators, and for three years I was an instructor in incubation in the poultry department at Cornell University. I was making my own expenses and, instead of spending a good part of the time in class, I attended to the duties of the superintendent of the poultry plant.

My first experience with a forced draft type of incubator occurred at Pacific, Missouri, in 1915 and 1916. When I graduated at Cornell I went to Pacific to establish a poultry farm and called it the Yesterlaid Egg Farms Corporation. During my studies at Cornell W. B. Candee and a man by the name of Skinner conducted a lecture course and told us about their plants. The former had an idea for a mammoth machine and I took him to Pacific with me, together with a car load of material and we built the first Candee incubator on the Yesterlaid Egg Farm at Pacific, Missouri.

(Deposition of Rolla Lawry)

Candee had the idea of hatching chickens upstairs and brooding downstairs, or, in other words, a combined incubator and brooder. My recollection is that the incubator which Candee built had a 3200 egg capacity. At that time the commercial types held from 120 to 160, and there was a large size I believe holding 420. After the Candee machine was finished we built five stacks of incubators about 22′ long, one above the other, in order to increase the incubator capacity. We were selling day old chicks, brooding white leghorns and selling eggs for hatching. Operating in a commercial way and endeavoring to make a profit. I was never interested in the experimental side of incubation, and the incubators which we constructed formed a collateral side of our commercial operations.

We operated the farm for fancy stock and day old chick sale, and during the summer we had a good many eggs to dispose of so I organized a cold storage company and built a cold storage plant in the local ice plant with the purpose in mind of taking care of those extra eggs and the cooperators and farmers who were raising our stock for us. One year after finishing the cold storage plant our day old chick business had grown to such proportions that we had to build more incubators, so I had a refrigerating engineer, Mr. Madison Cooper, of Calcium, New York, who had built the cold storage plant, take one room in the plant, reverse the refrigerating process and by heating it use it for an incubator. Mr. Cooper supplied the plans, drawings, heating equipment and the circulating fan, after which I had a local contractor, Mr. Joseph Ottman, do the work. I put up the boiler and burner

(Deposition of Rolla Lawry)

myself. Mr. Robert Schuchart was usually around the plant when I started the construction of this incubator. It was located in the basement under the receiving room in the cold storage plant. The room was about 20′ square and fully 8′ in height.

I first had the idea of building an incubator of this type in 1915, the exact date I cannot give, but it was after the spring hatching season of that year, which closes the end of May.

"Q39 Was it some time close after the end of that 1915 season, then, that you first got this idea of constructing this incubator?

A I think so."

The actual work was started on the incubator in the fall of that year. Meanwhile I discussed my plan with poultry friends, because I was very enthusiastic about it at that time. One of these friends, now dead, was Henry Steinmesh, formerly superintendent of the St. Louis World's Fair, in 1904, and an old poultry man interested in the sale of incubators. There was a constant stream of visitors at the Yesterlaid Egg Farm, some of whom were poultry editors and men from other farms. We did a great deal of advertising and, as our farm was unusual, we were attracting a great deal of attention. I, of course, discussed my plans with Mr. Ottman and with Mr. Schuchart.

The mammoth incubator at the refrigerating plant was completed in time to start the spring hatching season of 1916. We finally abandoned the incubators at the farm and did all of our hatching in Pacific, as this one incubator was large enough to take all that we had been doing at

(Deposition of Rolla Lawry)

the farm and many times over. I also bought eggs for other people and hatched them in this incubator, which was much more economical to operate than the machines at the farm where we had the old Candee machine we had remodeled and three others which were made by me and which were large replicas of the old type of hot water incubators with pipes overhead and an opening in the top and, of course, none of the incubators on the farm were of the forced draft type. I had, of course, heard of forced draft circulation and, in fact, Charlie Cyphers discussed and wrote about that method in 1890. (Objection as outside of the scope of this examination.) My memory is that the Cornell library contained a book on incubation by this man Charlie Cyphers which spoke of forced draft circulation. He also spoke about a duck ranch in Pennsylvania that had an incubator of that sort. Then Milo Hastings, in 1909 or 1910, wrote a pamphlet or prospectus on a forced draft incubator which he wanted to build at Oklahoma City, and I was familiar with that book when I was at Pacific. (Same objection.)

I purchased the boiler and burner for my mammoth incubator at Pacific. As I have said, Mr. Cooper actually helped with the construction of the incubator room. Before building the cold storage plant Mr. Cooper and I had discussed the possibility of him changing one of the rooms and I asked him if he saw any reason why a reversal of the cold storage process,—forced air,—would not hatch eggs and he replied that it should. I then asked him to give me plans for a room where the air currents would be reversed—from the opposite direction, and he drew up those plans. I do not know where those plans are

now, but very likely copies could be obtained from Cooper's office. The plans were completed and consisted of four sets of blue prints and a jacket full of specifications. The actual construction began sometime in the fall of 1915, so the room was ready for the usual spring hatching in 1916.

Prior to doing any actual hatching in this mammoth incubator we conducted certain tests. By heating the incubator room we checked the temperature and perfected some few little devices which the plans did not call for. I worked out a vane in the hot air flume which would flutter on a current of air so that if the power fan slowed down, because the current was turned off, or the auxiliary water motor slowed down, this vane would trap any air current, make an electric contact and ring a bell in the office and later on I had a man sleep in the office so that he would awaken if that occurred.

There were never any changes in the incubator room after it was originally finished except in things like renewing the insulation around the doors. As I said, there were no changes made as the incubator was mechanically perfect from a heating and ventilating point of view from the start.

The room in the cold storage plant we utilized consisted of a concrete floor with a mill construction ceiling; one wall was the spruce wall of the cold storage room and the other two walls were cement basement walls. The incubator was entered through a stock cold storage door leading to a 4′ x 6′ vestibule. To the right of the vestibule door was a thermograph, or a clock recording thermometer, the thermocouple of which led into the

(Deposition of Rolla Lawry)

incubating chamber and along the wall about ten feet from the entrance thereto. A door in the left side of the vestibule led into a room which contained the hot water coil, which was about 8′ long and made of two sections each about 3½′ high. That was the heating room and also contained a turbine fan on the wall between it and the egg chamber, boxed in a flume, and which pumped the air from the heating chamber into the flume which ran along the wall and ceiling of the egg chamber, and from that flume the air went into the ceiling and down through holes bored at regular intervals in the false ceiling over the egg chamber. At the extreme end of the heating chamber and on the floor was the open end of the flume returning the air from under the false floor to the said heating chamber, to complete the circulation. In the opening of this return flume was a damper, or adjustable valve, so you could divert a small part of the returned air to a stack which led outside. On the wall opposite to the turbine fan in the heating chamber was a hole about 5″ in diameter, with an adjustable damper over it and through which fresh air from the outside could be introduced when needed. As I have said, the egg chamber proper was about square and had the false ceiling and false floor that set about 2½″ off of the real floor and was in sections about 4′ square, so that it could be taken up, with holes in each section at regular intervals, a little smaller than the ones in the ceiling. The engineer had figured out the ratio that the holes in the floor ought to bear to the holes in the ceiling and also the holes in the floor varied some, the ones farthest away from the flume being larger than those close thereto. Air came through

the flume along the upper right-hand side and then came through the ceiling and down and was picked up under the floor by that flume and taken back into the heating chamber.

The space between the false and permanent ceilings was about 2½" and approximated the space between the false and permanent floors. Also in the heating room was a pan of water on top of that hot water coil to control the humidity of the air in the egg chamber and to prevent excessive evaporation in the eggs and to prevent sticking at the time the chickens pip. That was supplied by a galvanized iron boiler, which held 1½ gals. of water, and a Bunsen burner using compressed gas from bottles kept on the outside and which when expanded was allowed to flow in. It was known as Blau gas and was purchased from a firm in Kansas City licensed under a German patent. It was relatively expensive and, as we used little of it, it was satisfactory if bought at the right price. In other words, the price was not prohibitive if that price was right. When we first started to use the gas in the incubators on the farm it was reasonable and very convenient, but when the United States began to participate in the war it got higher and higher in price and my memory is that we were eventually unable to get it at all. I think that occurred in the summer of 1917. I then substituted gasoline under pressure, buying a tank with a hollow wire and burner and from which I secured sufficient heat, but it was not capable of regulation and, due to the change in the type of the damper, was not satisfactory; in fact it wouldn't work.

(Deposition of Rolla Lawry)

After the air went along the flume and was emitted over the false ceiling and then downwardly through the perforations therein, it formed a complete forced-down diffusion throughout the egg chamber. I use the word "complete" because I made a number of diagonal tests with a string full of thermometers. I did that by stretching a string diagonally from one corner of the ceiling to the diagonally opposite corner on the floor, and at intervals of 1½′ along that string I hung thermometers with the result that a remarkably even temperature was indicated and we thought it was perfect. One of the things we were trying to accomplish was a uniform temperature and we did actually accomplish that and which was proven by the tests conducted. There were several days that we did nothing but make such tests. After the stacks, or tiers, of egg trays were placed in the chamber we placed thermometers on eggs of one age in one section and of another age in another section and we found that if thermometers were placed on blank parts of the trays, where they would not be affected by the eggs, the temperature record would be essentially the same all over the room. The ordinary term for successful incubation of eggs is 21 days, but that varies some. The egg at first is inert and lifeless, but as life develops therein the egg acquires a higher temperature than the atmosphere of the room. I think it is desirable to maintain an equal temperature in the incubating chamber during the entire process.

The air, which went through the flume of my incubator at Pacific and was diffused downwardly through the egg chamber itself, was supplied by the turbine fan, I have spoken of, which was actuated by an electric motor with

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an auxiliary Red Devil water motor in case the electric current was shut off. Fresh air from the outside was taken into the heating chamber through the small inlet opposite the turbine fan, and which was controlled by a damper so that the fresh air could be cut off entirely. Very little fresh air was supplied the incubator except when eggs were being hatched. The intake was a circular hole 5″ in diameter and the slide was so fixed that only a 2″ segment of that circular hole provided the air.

The return flume connected the space between the false and permanent floors and the heating chamber. At its extreme end it was about 6″ wide and 18″ high, but where it delivered itself into the heating chamber it was 14″ wide and 18″ high and tapering in shape. This return flume was fitted with an adjustable valve so that some of the air could be exhausted, due to impurities therein. When hatching was in process, the air would smell badly. As I have said, the end of this flume came into the heating chamber, which made of it a closed unit. The door, or damper, in that flume, when completely closed, exhausted all of the air outside, but if the door was set as a damper, as was the case under normal operation, so that it came within about ½″ of the back wall of the flume, then that proportion of air returned into the heating chamber and circulated and the portion of air that got between the door and the wall would come into the butt end of the flume, which was like a funnel, and then into five galvanized pipes that went up and in through the wall to the outside. In other words, I would say that under actual operation of my incubator, with eggs in it, the door, or damper, was so set as to recirculate in a closed circuit 99

(Deposition of Rolla Lawry)

percent of the air, and 1 percent therefore was constantly exhausted and 1 percent of fresh air brought in. The operator regulated this entirely. He usually worked in the incubator in just a pair of overalls. The air was extraordinarily clear and pleasant, but if he noticed a little odor or closeness, he would speak to me about it and we would change the ventilation a little bit, but that was rarely necessary except at hatching time. With a big hatch coming on we would have to run some of the air out. I did not want to run in more fresh air than we absolutely had to and when emitting foul air we always opened the intake valve. The more air driven out the more moisture must be supplied. We attempted to maintain about 75 relative humidity and it was extra work for us if we run out air. Fresh air coming in changed the humidity and the water would dry out, which would mean we would have to watch the water pans and keep adding water to them. Eggs hatch better when the optimum humidity is maintained. If the air is too dry small chicks result, they don't hatch well.

When I would stand in the incubating chamber, with the man operating, I would notice a very general downward movement of air and I conducted tests in that respect. By holding a match near the ceiling the flame would be pushed downward, while if held near the floor it would be sucked toward the floor. Furthermore, we hatched our chickens in the bottom trays so that down would not be driven downwardly and over the lower eggs and after every big hatch we would take up sections of the floor where the chicks were and sweep out the down, which indicated to me that the air was going down and

out between the two floors. The match test, above described, indicated the same thing.

Eggs for the first hatch were set at the very beginning of the 1916 season, which opens just as soon as one can obtain fertile eggs which have not been chilled or frozen. We used brown and white eggs from my own farm, which were selected as to size. The eggs were candled after they were put in the incubator. As I have said, we did custom hatching and assumed that when people brought in their own eggs to be hatched they had selected fertile eggs, but, thereafter, after they had been in the incubator five or six days, we would candle them to find out whether or not they were fertile.

The eggs rested on trays about 11″ x 22″ and these trays were made with a wooden frame and hardware cloth bottom. They were placed in stacks something like books along the wall, every 3′ or so, so as to be placed or pulled out like drawers from two sides and extended from the floor to the ceiling. One of the boys who worked for me was tall and could easily take out the top tray, but I had to use a little stand in order to draw one of the trays, place another tray on top, turn it over and replace it. It was necessary to turn the eggs about twice a day. New eggs were placed at the top and the second week they would be moved to the middle section and the third week to the lower section to hatch. The first reason for that arrangement was to have the chickens hatch in the bottom trays. The incubator held about 100,000 eggs and there was one time we had it full to absolute capacity. Referring to the egg trays the "hardware cloth" I mentioned is a galvanized wire cloth with about a quarter

(Deposition of Rolla Lawry)

inch mesh. The trays in the racks cleared each other by possibly five inches and had a space for the air to pass down between the stacks.

"Q 143 So that at all times during the operation the air was—

A In complete circulation.

Q 144 Going over and around and between the eggs?—

A Yes.

Q 145 And through the bottoms?—

A Yes.

By Mr. Ely: I object to leading questions. I wish counsel would refrain from asking leading questions."

The incubator operated during the entire spring hatching season of 1916, which meant that there would be hatches of chicks every six or seven days and, of course, which denotes a continuous process. Immediately the chicks were hatched some of them were shipped and some placed on the farm and new eggs constantly put into the incubator. I would say that the 1916 hatching season extended over 15 or 16 weeks, with chicks being taken off about once a week.

The percentage of hatch during the 1916 season ran between forty and seventy percent and averaged about fifty percent, and this average we considered very good and was a little better than we had been doing at the farm. I still consider a fifty percent hatch very good. I was on a pleasure trip through New England last spring and visited some of the extremely successful hatcheries and found that they are still not doing much better than fifty to sixty percent. There are a few places, where,

(Deposition of Rolla Lawry)

they feed cod liver oil and hatch on a small scale, where they obtain a higher percentage, but, my belief is, fifty percent is a fair commercial percentage.

In securing this percentage of hatch during the 1916 season, I attained the purpose I had in mind in building this mammoth incubator at Pacific, and I was more than satisfied with the results; particularly so, as we had better results than we had been able to get with the smaller machines. The baby chicks hatched in this incubator were sold and shipped to a point within 36 hours of St. Louis upon order. The shipments occurred as fast as the chicks were hatched, and there were many such shipments. We obtained fifteen to thirty cents apiece for the pure-bred chicks, which was a good price. The chicks from some of the mixed eggs sold for around seven cents apiece to the ten cent stores, and there was a good deal of that business, especially around Easter. We obtained our selected, or pure-bred, eggs from our own farm, or bought them from farmers in that vicinity. We had quite a mail order business and we also nested some birds. I think we paid five cents premium for the eggs we bought and we always had more of those in the incubator than those obtained from our farm. The dead germs, or the eggs that did not pip, were buried or burned up and that was the usual practice. Necessarily, some of them would have to be disposed of in that manner unless we obtained a 100 percent hatch.

We continued to operate the incubator through the entire hatching season of 1916 and next operated it during the spring of 1917 and continued to use it throughout the entire hatching period of that year. I did not

(Deposition of Rolla Lawry)

stay at Pacific entirely through the 1917 season, because the conditions were changing, labor was becoming high priced and I expected to be called for the draft at any time, or to go in the food producing unit. I also had an opportunity to go into work which seemed like very good money at the time. I had been paying the boys at the farm $10.00 to $12.00 a week when all of a sudden it was $30.00 a week, due to war labor conditions, and the fact that the railroad shops in Pacific were taking on men. Furthermore, we had been unable to get Blau gas for quite a little while and tried to operate with gasoline under pressure, which did not give very good results as we could not control it satisfactorily. I believe I went to work in St. Louis in May, of 1917, and then would return to Pacific in the evenings, and up until that time I had continued to operate the incubator as I had the preceding season, with a very wide distribution. Our results in 1917 were about the same as in 1916 and the incubator did pretty well all the time we ran it. There was no change in its operation over the preceding year. No changes were made. When I went to St. Louis I began to work for the Standard Pencil Company and remained in that city until a few months ago. I did not again live on the farm because I was able to make considerably more money.

My first employees, who attended to the operation of the mammoth incubator at Pacific, were George Ruede and Frank Miller, and, to the best of my recollection, the latter was there most of the time while the incubator was running. He handled the eggs, put them in, turned them and took out the chicks and boxed them. Gordon Scott

(Deposition of Rolla Lawry)

was farm superintendent and was generally in charge of the business under me. He was a native of Pacific, but had been living in California and he came back from California and went to work for us. He returned to take the position with us. He worked with me on the mammoth incubator before I left in 1917 and took charge of that incubator when I left. Mr. Schuchart was in charge of the refrigerating plant and was never employed by me to work in the incubator. I do not remember ever discussing the incubator with Mr. Schuchart and he was not interested financially in the machine. Mr. Schuchart was a pretty good sort of fellow. He was overworked and was a submerged kind or morose sort of person—good enough at heart but not very companionable. I do not remember ever making any statements to him about the results obtained by the use of my mammoth incubator. I was never at any time discouraged with the results obtained with it. It would be the same with a little incubator, if you get a poor hatch you feel terrible and if you get a good hatch you feel fine.

I am asked whether good and bad hatches result from some inherent defect in the machine or in the method of operation. If I knew that I would settle a lot of problems. I can tell you what a good hatch is and what a bad hatch is, but as to what caused them is another question. It is as hard to answer as why some girls are born with red hair, some with black and others with brown. It is one of the vagaries of nature which you find in the chromosome of heredity and in the germ-plasm. We can supply optimum physical conditions, which we think imitate nature, and we can do exactly the same thing with

(Deposition of Rolla Lawry)

one batch and everything goes well but the next batch doesn't do so well. The only opinion that a careful person will venture is that the germ-plasm deposited in that egg—deposited by the parents—varies in vitality and works some other way than another batch of eggs will work under the same conditions. When I obtained a 30 percent hatch it was an occasion to be blue, but when I got a 75 percent hatch it represented an occasion for celebration. A season's average of 50 percent was very satisfactory and we did a little better than that with this machine and I am considering the results of both seasons when I say that.

In the operation of my incubator during the two seasons of 1916 and 1917, I did not consider it desirable to determine in some way the amount of air which I could circulate through the chamber. My object was to incubate a great number of eggs in a large room, and there was no way to do it in all parts of that room except to force the warm air into all of those sections of the room. After I had heated the air and allowed natural convection to take place, the temperature would naturally be higher at the top than at the bottom, but if I controlled the temperature of the air then I could keep it at the desired degree. For example, when I started to heat the incubator chamber, if I found that, on the string of thermometers from one corner of the room to the diagonally opposite corner, the temperature was higher by one degree at the ceiling all I had to do was to speed up the fan, push the air down and thereby equalize the temperature. Forced draft circulation gave me absolute control of the temperature at all parts of the room at all times.

(Deposition of Rolla Lawry)

The thermograph, or large recording thermometer, indicated a temperature of absolute regularity. The tracing on the charts showed very little variations in the twenty-four hour period, almost as though the lines were drawn around the charts with a compass. When variations resulted they would be say a quarter of a degree and so little that close attention would have to be paid to see the change recorded. No irregularities of temperature resulted in the operation of my incubator. I think the temperatures obtained during the operation of the incubator were around 99° to 101°. Room temperatures of over 101° would be dangerous and would result only because considerable animal heat in the eggs had affected the room temperature. Eggs sometimes reach a temperature of 103½°.

"Q216 Do you know Dr. Samuel B. Smith, the plaintiff in this cause?

A I have met Dr. Smith a time or two at poultry meetings. It has been years, but I did know him by sight years ago.

Q217 Did you at any time, Mr. Lawry, divulge to Dr. Smith anything about this incubator or the plans that you had made for its construction?

BY MR. ELY: Objected to as outside of the scope of this examination.

A I don't recall that I did.

Q218 Did you at any time discuss anything about your structure—or the structure that you had at the plant?

A No, I never did.

(Deposition of Rolla Lawry)

Q219 Did you ever meet Dr. Smith before the fall of 1915?

A I believe that I did.

Q220 Probably at a poultry meeting?

A I think I met him at—I met him twice, and I know both times I met him were at poultry conventions. Where they were and what the dates were, I don't know.

Q221 Do you remember whether or not Dr. Smith ever asked you about your machine or any plans you had made for it?

A He did at one time.

Q222 Do you remember when that occurred?

A No, I do not.

Q223 Was that prior to 1915?

A That I don't know. I answered that when I said—I remember distinctly having met him twice and talked with him twice. Both times were at meetings of the American Poultry Association, but the places I don't know. I have been to so many of those.

Q224 Do you remember whether you answered any of his questions?

BY MR. ELY: Same objection.

A No, I don't."

I have in my possession here some correspondence relating to the operation of this incubator at Pacific, Missouri. Here is a letter from Madison J. Cooper of Calcium, New York, dated May 29, 1916. He is the gentleman who helped me with the construction of the incubator. He was a refrigerating engineer at that time and located at Calcium, New York. The first letter from him was written on March 31, 1916, and I recognize the

(Deposition of Rolla Lawry)

signature attached thereto as being the signature of Mr. Cooper, as I was familiar with his signature through other correspondence. I had had a great deal of correspondence with Mr. Cooper 18 months before when I was building the cold storage plant at Pacific. Mr. Cooper was the architect for that plant. I received this letter in the usual course of mail delivery; I think it has been in the files of the Pacific Refrigerating Company since that time.

(Whereupon the said letter, above mentioned, of March 31, 1916, was marked for identification as defendant's Exhibit UU)

At the bottom of this letter are three lines of my own which I made a few days after the receipt of the letter and before I replied to it.

(Whereupon the said letter heretofore marked for identification as defendant's Exhibit UU was introduced in evidence by counsel for defendant and was marked by the Notary as defendant's Exhibit UU)

I am producing a carbon copy of a letter which represented my reply to Mr. Cooper's said letter of March 31 and which has been taken from the files of the Pacific Refrigerating Company and is dated May 26, 1916, and addressed to Madison Cooper at Calcium, New York. I remember writing the letter although the carbon copy naturally bears no signature. As I recall it there was another page to this letter but I do not know what has become of it, although I think the one page which I have contains all of the discussion relating to the incubator at Pacific.

(Deposition of Rolla Lawry)

(Whereupon, and over the objection of counsel for plaintiffs, on the grounds that the witness had nothing to do with taking the letter out of its proper place and also because the letter and the correspondence are incomplete, the said letter of May 26, 1916, above referred to, was offered in evidence by counsel for defendant, as defendant's Exhibit VV.)

The bottom of this page here, defendant's Exhibit VV, was not cut off by a shear, as suggested by counsel for plaintiffs, but was written on paper from which the head had been cut off at the printing office and which we used for carbon copies. I produce another letter from the Madison Cooper Company, of Calcium, New York, addressed to me, as Secretary of the refrigerating company at Pacific, which was dictated but not signed by Mr. Cooper and bears date of May 29, 1916. In this letter Mr. Cooper has referred to and acknowledged receipt of my letter of May 26th, and says therein that he appreciates the detail about the incubation. This letter was received by me in the usual course of correspondence and bears my pencil notation thereon requesting that it be filed.

(Whereupon the last referred to letter, dated May 29, 1916, was introduced in evidence by counsel for defendant, and marked defendant's Exhibit WW.)

I am very well acquainted with D. E. Hale, who lives in Chicago and who was formerly a judge and editorial writer for some twenty-five years. I have read some of his articles on incubation but I do not recall exactly when I read them. While I was operating my mammoth incubator at Pacific, Missouri, Mr. Hale had an article

about it in one of the journals he was publishing. It was a fully illustrated article with four or five photographs showing the entrance to the incubator, the heater, the outside motor, and, I think, that he showed two views of the interior. Photographs, with that article published by Mr. Hale, were obtained from me. In fact, I took a lot of pictures of the incubator. I believe Mr. Hale came to Pacific, Missouri, to see the incubator. I do not, at this time, remember what poultry journal contained that article, but it was published in Chicago and was the consolidation of two other poultry journals. Mr. Hale has been on the staff of three journals but I cannot remember which one contained the article relating to my incubator. (Objection as not the best evidence.)

When I left Pacific, Missouri, in 1917, my plans were not very definite. I probably was a little too young to know how serious things were at that time. My chief concern then was reducing the payroll in a business that was not flourishing. The poultry business was in a pretty hard way at that time, during the war. I know that particularly because a few weeks after I had been living in St. Louis I received a wire from Grant Curtis, who was then editor of the Reliable Poultry Journal, and from two or three other people wanting to know if I would serve in Washington on a board to lobby for the poultrymen and try to obtain help in the stabilization of market prices for eggs.

"Q270 So that you had such considerations in mind when you left there as to your possible return, also as to the conditions of labor and the high price of labor and the inability to obtain the Blau gas?

(Deposition of Rolla Lawry)

BY MR. ELY: Objected to as leading and immaterial and several other objectionable features of this question.

BY MR. TAULBEE: I will ask you, then, to specify what objections you have in mind.

BY MR. ELY: It is leading; there are three or four questions all rolled into one; it is immaterial and irrelevant; it hasn't anything to do with the subject-matter. Any more objections you wanted entered?

BY MR. TAULBEE: Not if they are of that class.

A Yes."

I never applied for a patent on the incubator I constructed at Pacific, Missouri, as it never occurred to me that there was anything patentable. I was not interested. I was just making use of a reversed refrigerating system and employed principles which were well known at the time I used them. I have no inerest in this litigation, except I hate to see a fellow have his business taken away.

CROSS EXAMINATION

BY MR. ELY

I sure have an interest in this litigation. I have a human interest in this litigation and if I didn't have I certainly would not drop two days of my time, representing part of this day and the long distance calls I have had over the telephone. I get so sick and tired of litigation that if there are any ends of justice I can further by telling the truth I am glad to come in and tell the truth. As to defendant's Exhibit VV, the stenographer probably placed the carbon wrong and it ran out a short sheet so that the letter is not closed thereon.

(Deposition of Rolla Lawry)

"Q279 Then, that carbon copy, Defendant's Exhibit VV, is incomplete, is it not?

BY MR. TAULBEE (to the witness): You are referring to the memorandum on Defendant's Exhibit UU?

BY THE WITNESS: Yes.

BY MR. TAULBEE: That is the letter dated March 31st?

BY MR. ELY: I think I am cross-examining the witness.

BY MR. TAULBEE: I am just trying to keep the record clear.

BY MR. ELY: Never mind. You can straighten the record out when your time comes."

When I started using the incubator in 1916, I used racks and did not use ordinary egg crates. "We had a practice of bringing the eggs in from outside and setting them in the vestibule to temperature them before we put them in the incubator. And I recall one time that we had everything full—our trays full—and there were some cooperative eggs come in several days before it was time to put them in. We set them in the vestibule. Then we brought them in,—just the cases of eggs as they were,—and set them in the aisles, thinking we might be able to incubate them the first three or four days just in the cases; but that didn't turn out." In using the word "case" I refer to the ordinary cardboard solid flats containing thirty dozen eggs, just as they are ordinarily shipped to the market. I had no special flats made but simply used the ones those special eggs came in and it was done only that one time, to satisfy my curiosity and

(Deposition of Rolla Lawry)

to overcome an emergency. That is the only time I recall ever using egg cases in the incubator and I used the racks from the very start. I did not attempt first to incubate eggs in egg cases with the special flats to replace the ordinary flats. I have no recollection of that.

The fan in the incubator at Pacific was located in a position so that it would draw air from the heating chamber. The flume ran along one side of the room, then turned and ran along another side and contained a damper to increase the velocity of the current without changing the speed of the fan. There were a number of holes along the wall so that the damper could be adjusted to various heights. There was a water pan placed on the heater coils and not in the flume. There was not any passage from the flume up to the false ceiling until after making a right-angle turn. There was a 2½" space between the false and permanent ceiling. The false ceiling was in three or four sections and fastened to partitions by means of ring-buttons, or cupboard catches and the partitions were made of two by twos laid edgeways with a 7/8 strip underneath. I am told by plaintiffs' counsel that he measured the space between the false and permanent ceilings and found it to be 1-5/8", and I am asked whether there has been any change made in that space since I used the incubator. I think an answer to that question revolves itself into whether or not plaintiffs' counsel correctly measured the space or as to whether my memory is incorrect as to 1/8". I have given the measurement as my memory indicates, but I am not positive about it. My memory is that the space between the permanent and false floors was about the same. The

(Deposition of Rolla Lawry)

diameter of the holes in the false floor varied from 5/8" to possibly 1-1/8".

I first used Blau gas and then later used a gasoline heater. We might have started with gasoline and found it unsatisfactory and so changed to Blau gas and then later went back to gasoline. We ended up with the gasoline. I recall testifying in the case of Buckeye Incubator v. Bert Boling in the District Court of the United States for the District of Indiana, at Indianapolis in January, 1926, as follows:

"We were using as a heating medium a compressed gas, Blau gas, made in this country under German patents and the war knocked that out so we were out of gas and so we discontinued it."

The facts so recorded are true. I also testified "and then used other incubators", which likewise was true. The incubators referred to were Prairie States, which we used on the farm to finish out the season of 1917.

I started building the incubator at the Pacific Refrigerating Company in 1915 and finished it in 1916, and started hatching with it in 1916. I, likewise, remember testifying in the case referred to as the "Boling case", as follows:

"You see if the warm air was in there the natural convection against gravity would bring it against the ceiling and we pushed it against the force of the fan."

I made that same statement here just a few minutes ago. That answer was made to a question why we were circulating air instead of heating it without circulating it and I intended to say that if there was no force or control of the air the natural thing would be for the

(Deposition of Rolla Lawry)

warm air to stack up against the ceiling, but by forcing it, and especially bringing warm air in through the ceiling we would force it down to the bottom, or floor, of the incubator. Another way of stating this is that we simply reversed the refrigerating process, but I do not mean by that the process of storing vegetables and things in a refrigerator. The refrigerating process that I refer to is where cold air is brought in at the bottom and pushed up and out at the ceiling, but in my incubator we reversed that process by introducing warm air at the top and pushing it downward.

The bulb of the recording thermometer was located on the wall to the right of the door about half way between the floor and the bottom of the distributing flume. It had a flexible cord which should have been bent out fully two inches from the wall itself. I also remember testifying in the Boling case that "We got about a fifty per cent. hatch out of the eggs," and that is true for we did get fifty percent, or a little better. I said fifty per cent in the Boling case and I do not want to change that testimony any.

RE-DIRECT EXAMINATION

BY MR. TAULBEE:

The fifty per cent average result was the mean average of the two hatching seasons and I considered that pretty good.

RE-CROSS EXAMINATION

BY MR. ELY:

I did not at any time have anywhere near a total loss of all eggs.

(Deposition of Claude Hull)

(Thereafter follows the notarial certificate under which the preceding deposition was taken.)

Hereinafter follow the depositions of certain witnesses taken at Cleveland Ohio, on behalf of the plaintiffs herein, as rebuttal to the testimony and evidence adduced by the defendant herein, under Order of Court, dated December 3, 1930, reopening this cause for the taking of further testimony.

CLAUDE HULL,

being called as a witness by plaintiffs and first duly sworn testifies as follows:

DIRECT EXAMINATION

BY MR. ELY:

I am 39 years old and operate a commercial hatchery located at Memphis, Tennessee. I am acquainted with the plaintiff herein, DR. SAMUEL B. SMITH, and worked for him beginning in December, 1914. Before that I was assistant superintendent of construction of the American Gas & Electric Company at Tiffin, Ohio. Dr. Smith asked me to come to Cleveland where he was making a brooder stove and demonstrate the stove at the Pittsburgh Poultry Show in December, 1914, and which offer I accepted, coming to Cleveland and going to Pittsburgh where I demonstrated the heater in December 1914. After the show, which lasted a number of days, I returned to Cleveland and worked for Dr. Smith assembling the stoves until January of 1915, when I demonstrated one of those stoves at the Madison Square Garden Show. Upon my return to Cleveland, Dr. Smith sent me through the West selling these stoves and I got

(Deposition of Claude Hull)

as far as Wichita when he wired me to return the last of February or first of March. I came back to Cleveland and went to work in Dr. Smith's hatchery, located in an old church on Madison Avenue at 79th Street. I took up that work about the first of March and put in all of my time at the hatchery until the end of the 1915 season.

The old church I am referring to had three rooms with the doors facing towards the city, holding approximately fifty to fifty-five thousand eggs. The rooms were about 10 x 13 or 14 and I remember they had 10′ ceilings. There were three Emerson 16″ fans in the center making approximately 1700 revolutions per minute with an intake pipe over the top of the center fan. There were two 10″ outlet pipes, one over each chamber. There were curtains on each side of the corridor reaching down to the top of the hatching racks below. Steam was blown into the chamber for moisture, the steam pipes being located on each side of the fans with the boiler in a pit in a room back of the incubator room. The egg trays were mounted on journals and were turned to approximately a 45° angle with three permanent trays on top, as they did not believe in turning the eggs for the first three days and they went into these racks. There were twelve or fifteen of those turning racks with three permanent hatching trays on the bottom, which did not turn. Each tray held about 120 eggs. The fans blew air straight down where it hit the floor, bounced up and came out about at the curtain. The path of the air was downward, it was blown downward, after which it went in under the hatching racks and went on out. A certain amount of it went

(Deposition of Claude Hull)

out, but some of it would be recirculated again. In other words, the air was blown to the floor and then came up under the hatching trays and passed on up through the egg chamber, a certain amount being drawn back and recirculated while some of it went out through the outlet pipe.

My duties consisted in traying eggs, setting eggs in the machine and lowering eggs. I would put eggs in at the top and when three trays were taken out at the bottom the others were moved downwardly and three new trays set on top. Chicks were hatched in that incubator in the three hatching racks in the egg chamber. Eggs were set in the incubator every three days and we took out chicks every 21 days. We did not take out chicks every three days, as, for instance, if we set on Monday we would take out chicks on Tuesday.

Dr. Smith instructed me how to operate the incubator and paid me a salary. It was Dr. Smith who was in charge of the operation at that plant and he was there during that time. It was a one man organization and Dr. Smith managed the whole business.

There were three separate incubators, each with a capacity of between fifty and fifty-five thousand eggs. Some of the eggs which we set in those incubators came from Volla Graham at Nevada, Ohio, some from Attica, Ohio and a very few were purchased locally, most of them came from down in that section. The chicks were sold in the regular way, advertised in catalogues and circulars and were shipped and sold to different customers. I would take them on down to the express office,

(Deposition of Claude Hull)

down town. At that time all the chicks were shipped by express.

I would say that we averaged between sixty and sixty-five percent hatches and the condition of the chicks which came off was very good.

The turning racks were made out of channel iron and each twelve hours would be moved so as to turn the racks to the other angle. My first impression of the current of air going through the incubator was that it was too strong and I did not want to stand it. It was a draft confined in a small chamber, and different than anything I had been around before. I am now operating three Smith and one Buckeye incubators and my recollection is that the draft in the Smith incubator in 1915 is practically the same as in the present Smith incubator.

I actually set eggs. After the eggs were trayed we would set three trays at a time at the top of the chamber. In other words, when we started the machine the first thing we did was to load up three trays all the way around the machine, each column, and at the end of three days we would take those trays out and lower them three spaces lower and then set three new ones in their places and then at the end of the next three day period we would lower those six trays down and put new ones in the top each three days until we got them down to the last end of it, which was eighteen days, when they would go in the hatching rack. When I returned to Cleveland, from my trip to Wichita, we were just getting ready to start the Smith incubator and I think I helped to set the first eggs in it. I have said that there were three stationary racks, twelve to fifteen tilting racks and three or

(Deposition of Claude Hull)

four hatching racks below and there were twelve or fifteen of those columns. When the incubator was being used there were eggs therein at ages from one day old until hatching time.

I worked for the balance of the season and went home sometime in July, and before the twelfth day of that month, I know because I was home for my birthday, due to the illness of my father, who ran a general store at Carrothers, Ohio. My father was postmaster and I was then appointed assistant postmaster and I ran the business until the death of my father on October 29th, 1917, after which I purchased the business and operated it until the first of March, when I sold out and went into the army March 4th, 1918. In other words, I operated that store at Carrothers from July, 1915 until March 1st, 1918.

CROSS EXAMINATION

BY MR. TAULBEE:

I used my first Smith incubator three seasons, my 2nd Smith incubator two seasons, and my third Smith incubator one season. I also used one Buckeye incubator. My original incubator was a New Town. Two of the Smith machines have an egg capacity of forty-seven thousand and one has a capacity of fifty-two thousand eggs. I am agent for the Smith Company at Memphis and have been that Company's agent since 1917. Dr. Smith's first wife, now deceased, was my mother's sister.

When I first went to work for Dr. Smith, and before going to the Show at Pittsburgh, I did not visit the old church on Madison Avenue in Cleveland, nor did I see, at any place, the incubator I have been testifying about

(Deposition of Claude Hull).

before that time. The first time I saw it was when I came to Cleveland in December, 1914, and at which time I lived with Dr. Smith on 79th Street, but I do not remember the number of the street nor the number of the church on Madison Avenue, nor in what direction that avenue runs. The church was a frame building of one story, but Dr. Smith was not living in it when I first went to Cleveland nor did he at any time during my stay there. It is a fact that I first saw this incubator in the church in December 1914. When I first saw it the incubator was using three 16" Emerson fans in each chamber, or room, of which there were three in number. From the amount of work that had been done on them I think those fans had been in operation for sometime, I wouldn't say how many years. By "sometime" I mean that the fans were not efficient. I had been doing electrical work before I went to Cleveland and one of my duties was to keep those fans going and we did have lots of trouble with them. The Smith Company puts out an incubator now with a fifty-two thousand egg capacity and a smaller size which are referred to as Seniors and Juniors.

I cannot say how often daily the doors of the Cleveland incubator were opened because we were constantly working in there, and, of course, it was necessary for us to go in and out of those doors many times daily, as we would have to turn the eggs every morning and evening and have to lower them also. If one of the fans ceased functioning, I would have to take it out and replace it with another and I would say that I, or some other employee, was in and out of the incubator many times a

(Deposition of Claude Hull)

day. There was only one door into the incubator. I do not remember the type of door, but it was a little wider than an ordinary sized door. When I first went to work in the incubator at Cleveland there were other persons employed there. Some fellows were working on stoves and there were a couple of fellows working in the incubator and doing general hatchery work. One was called Bob Crawford and the name of another was Tom Morgan. I associated with them and that is how I remember their names and do not remember the names of any others. I haven't seen either of these men since that time and I don't remember the other employees. There were visitors looking at the incubator at that time as it was quite a curiosity.

We would count the chicks hatched in each tray. From some we would get forty to fifty, some a hundred, others sixty, seventy or eighty, all depending upon the eggs. At that time we did not have flock management and control and if the parents were not properly mated we would have considerable numbers of infertile eggs, which was due to lack of the germ. I do not recall that we were troubled with overheating, nor do I remember whether we ever had to leave the doors open. I would not say that we did not. I simply do not remember about that. I do not remember whether at that time there were two employees by the name of Carrick, husband and wife, working about the incubator. After I left Cleveland and went home I would return there and I know that the Carricks were there then, but whether they were at first I do not remember. The fans were in the ceiling of the central corridor and the steam pipes

(Deposition of Volney L. Graham)

were along side of the fans. There were three permanent racks, which could not be turned, on each of the stacks. There were times, during the season of 1915, when the incubator ran at capacity, but, of course, we could not fill it at first because, as I have said, we set only three trays around the top. It was a continuous process of hatching, we would set three at the top, then lowered them down and set three more at the top, and so on each three days so it would hatch every three days. If we had set the trays all at one time the incubator would not have hatched every three days. After it got going it was kept at capacity until we tapered off toward the end of the season. The incubator was not shut down when I was working on the fan. We had an extra fan.

When a boy I saw Dr. Smith at Attica, Ohio, and saw the incubator he had, but I do not remember anything about it. I do not remember whether or not that was prior to 1911, when I left my home and went to Tiffin, because Dr. Smith had many of those incubators up there and he was experimenting, but I do not remember whether he was using fans in his incubators.

VOLNEY L. GRAHAM,

being called as a witness by the plaintiffs and being first duly sworn, testifies as follows:

DIRECT EXAMINATION

BY MR. ELY:

I am 48 years old, live at Nevada, Ohio, and for the past three years have operated a hatchery at Wyandotte, Ohio, known as the Graham White Leghorn Farm. I know Dr. Samuel B. Smith, one of plaintiffs herein, and

(Deposition of Volney L. Graham)

bought eggs for him which he used for hatching purposes. He engaged me to buy eggs in August of 1914 when he came down to my place and we made a trip over the territory and engaged eggs for the next season of 1915. That trip was made in August, or the forepart of September, and we made arrangements for delivery of eggs in 1915. This arrangement was made with Ed. Walcott, Daniel Walcott, at Harpster, M. B. Underwood, Monn Hoover, B. K. Hoover, Route 5, Bucyrus, Joe Blosser and Henry Hall, out of Marion. I actually picked up those eggs we had contracted for during the 1915 season and shipped them to Dr. Smith. I did the same thing for him during the years of 1915, 1916, 1917 and some in 1918. I started about March first shipping eggs to him and I have a record that shows the number of eggs purchased and shipped during the year 1915. I produce a book which contains those entries and which has been kept in my home, and the entries were made by my wife and the information for those entries was obtained from Dr. Smith, who told us to keep an accurate account so we would know something about the business. I knew the number of eggs shipped and I told my wife and she entered it in the account. This book indicates the first eggs were shipped to Dr. Smith on March 15, 1915. The entries were kept in different columns as to the best breeds from which the eggs were obtained. This record was the best we could do in setting it down at that time. I fix the date as being 1915 because I was up to the hatchery in that year and, as I didn't have enough money with me, I asked Dr. Smith to cash a ten dollar check. I kept money in the Farmers & Merchants Bank in Nevada,

(Deposition of Volney L. Graham)

and Mr. Wolfe made it his business to put down every man's name that I had given a check to in my bank book and here is "S. B. Smith", cashed a check for ten dollars June 4, 1915. I commenced to purchase eggs for Dr. Smith in March and this check was dated June 4, of that same year, and I was at the hatchery when I got the check. I had bought eggs before this trip to the hatchery when I got the check cashed. I will make a check mark in the book where the entry appears about my check to Dr. Smith. I don't know where Dr. Smith was when he cashed the check, but he gave me my money and I gave him the check at his hatchery in the old church on Madison Avenue in Cleveland. The occasion of my being in his hatchery is that I had shipped him a good many eggs and I thought it was a good thing if I would keep it up in other years, and I was looking around to see if I was shipping to the right kind of a place, because I was paying my money out for the eggs and I wanted to look around a little bit and see what I thought of it. I was there three, four or five days. I first visited the Smith hatchery at Cleveland on the 2nd day of June, 1915, and I fix that date by the fact that June 4th he gave me the check, which is the one referred to in the bank book I have just produced, and which, together with the others, has been kept at the bank.

(Whereupon counsel offered in evidence as plaintiffs' Exhibit A-1 the said bank book, above referred to, and to which counsel for defendant objected on the grounds of insufficiently identified, not properly proved, incomplete entry, not the best evidence and as being immaterial, irrelevant and incompetent.)

(Deposition of Volney L. Graham)

Another way I can fix the date when I visited the Smith hatchery in Cleveland is by the fact that my daughter was born on March 12, 1915, and she was three months old, between March 12 and June 4. My wife accompanied me on that trip and we took the baby along. We remained in Cleveland five days and when we visited the hatchery Dr. Smith was there all of the time. We went into the church building and examined the hatchery. I am asked to describe the hatchery as I saw it in June, 1915.

"It was an old church and it was ~~one room~~ to the south, and the biggest part of it was facing—wait a minute, may be I am wrong. It was on Madison Avenue, and the largest room, where the incubators were in was facing Madison Avenue, and the other rooms, at the back, a little porch on there, and that faced the east, and the incubators set in the room nearer the road, nearer the street."

There were three incubators which held fifty-five thousand eggs. The door was 3′ or 3′6″, and I would say the hallway was 3′ wide and each space on the side of the hall was 3′ wide, which makes it 9′ wide and 10′ high. There were eight or ten rows and there were egg trays arranged in stationary racks on the top of the incubator, and Dr. Smith told me the eggs should not be turned the first three or four days. There were fifteen trays in the rack where the eggs were to be turned and three hatching racks at the bottom. I did not get in behind so that I could see how the tilting trays were fastened. The tray would be level when it was taken out of there and then when you wanted to turn the eggs in the morning you

(Deposition of Volney L. Graham)

would turn them one way and in the evening turn them another way. It would make no difference how you turned them. The trays were at an angle of 45° either way when they were turned. I saw chickens hatched in that incubator. There were three fans above that forced the air straight down. 55,000 eggs in a machine, and there were three fans above.

"Q90 Where were the fans located with respect to the egg racks?

A So to speak they would be in probably a foot from each end, and then divided separately, one might be in the center a certain distance, the other one the other way from the center."

The 16" fans were directly above the hall where one walked in and they were in operation when I was in the chamber and they created a draft which was a good stiff breeze, I would say a strong breeze. After leaving the fan the air circulated down under the curtain and back up through the eggs.

"Q97 And did you observe any openings through the ceiling of the incubator?

MR. TAULBEE: I object to that as leading.

A The intake at the top, at the center of the machine."

These openings were located back of the curtain in the center of the compartment. I saw eggs set in those incubators and Dr. Smith explained to me how the machines operated. Fresh eggs were set at the top and the chicks down in the hatching racks. The trays of eggs were left at the top in the stationary trays for three days and then moved down and every three days they were moved again

(Deposition of Volney L. Graham)

until they eventually reached the hatching racks and fresh eggs above them. The incubator when I saw it was of fifty-five thousand egg capacity and the stationary, tilting and hatching racks were full of eggs and there were chicks hatching, and I counted 103 white leghorn chicks out of a tray of 117 eggs.

"Q108 Did you have anything to do with the shipping of chicks while you were there?

A I wasn't an employee; I was around there at that time, but not usually being around where there is anything to do I ain't in it, I helped Mr. Hull take chicks over to stores here in Cleveland."

We had an old Ford touring car and, by taking the cushions out, we would pile chicks in the back to its capacity. The chicks were in boxes and I was there five days and made trips over town to the express office.

I continued my business relations with Dr. Smith during 1916, 1917 and a part of 1918. I was employed at the hatchery in making brooder stoves in the fall of 1915 and moved to Cleveland and worked there until 1916 when I went back home and shipped more eggs and continued that during 1916, 1917 and a part of 1918.

(Whereupon counsel for plaintiffs had the above referred to bank book marked for identification as plaintiffs' Exhibit A-2)

I now operate, and have been operating, Smith incubators since 1927, and have operated other incubators since 1913 or 1914. I am engaged in that business and I think I am an experienced hatcheryman. I have operated Smith incubators since 1927.

(Deposition of Volney L. Graham)

"Q124 Now, how does the velocity of the air and the method of operation of the Smith incubators that you have at the present time, compare with your recollection of the velocity of air and the method of operation of the incubators you saw at the Smith hatchery in 1915?

MR. TAULBEE: The same objection; and further, that the question is leading, and prompting the witness and calling for a comparison.

A Why, I would say it was practically the same, as near as I can tell. I didn't put any speeder on it, what I mean, tester to test the speed.

Q125 But your best recollection is what?

A I would say it was the same."

CROSS EXAMINATION

BY MR. TAULBEE:

I am not agent for the Smith Incubator Company at Wyandotte, nor have I any business dealings with Dr. Smith at the present time, and have sold no incubators for him. I am asked whether I am related to Dr. Smith by blood or marriage.

"A I would say no, and I would say yes.

Q130 What do you mean by that?

A I will leave it to you.

XQ131 Just explain what you mean.

A My father's mother and Dr. Smith's father were half brother and sister."

I surely know that the eggs I shipped to Dr. Smith in 1915 were hatched. I was there at the time they hatched. I was, of course, not in Cleveland when all of the eggs were hatched which I sent in during 1915, but I saw different names on the trays in the incubator that I sent

(Deposition of Volney L. Graham)

up there when I was at the Smith hatchery in that year. I was in and around the incubator for a few minutes each of the five days I spent in Cleveland. I did not make any measurements of the incubator, but I knew by the looks of the thing, and in saying it was 10′ high by 9′ wide I was merely estimating it and, of course, did not measure it, nor did I measure the fans, and I do not know whether they were 16″ fans or 32″ fans. I had no object in making measurements and I did not.

"XQ152 How has your memory been refreshed as to those things?

A Why, I talked with these men right here.

XQ153 You are referring to counsel for plaintiffs?

A Yes, sir.

XQ154 Did you talk to Dr. Smith, too?

A He sat in when I was talking to them.

XQ155 When was that?

A It was yesterday.

XQ156 Did you see him this morning, Dr. Smith?

A I saw him go through the room there.

XQ157 He was in the plant here where we are taking these depositions?

A Yes, sir."

I only know those incubators in 1915 held fifty thousand eggs because Dr. Smith told me. I did not count the eggs nor did I estimate them, but simply went by what he told me. He also told me how the incubator operated and I did not make any tests to ascertain as to how as I was not interested in that.

I am asked whether I know what became of the air after it was driven from the fan.

(Deposition of Volney L. Graham)

"A Why, if I see an intake and an outlet, and there would be a certain amount of it would go out, but as fast as those fans were running, I couldn't see how it could all go out of it.

XQ165 That was a mere conclusion; you didn't make any tests?

A No."

There were curtains in between the hall. I am merely offering my conclusion as to what became of the air after it passed downwardly from the fan and also basing it on what was told me at that time. I did not actually count the number of trays in each of the racks, and in saying that the number was fifteen I was "judging, from looking at the size of the racks I helped them pull out and pull down. We took three out of here, took fresh eggs and put them here, and took them down and put them here, and then down and put them here, and so on down till we got into the hatching rack with three." No one has refreshed my recollection as to the number of trays in each of those racks except Dr. Smith told me when I was in Cleveland at that time. There were three hatching racks at the bottom with three fans above, one aisleway with two sides and a curtain on each side. The fans were all situated straight above the aisleway. I didn't measure the room, but I would say it was ten or twelve feet wide. I am asked to estimate the number of feet between each one of the fans.

"A That is what I was trying to get at, give you the width of the machine and probably divided equally, straight above the aisleways, and in a ways from the door

and in a ways from the back, and the other one set in the center."

The air from the outside two fans struck down through the aisleways and my idea was it went back up through the eggs, but I made no test of that. That is my idea and I was told that at the time, and as to whether I have been told that since, I know it by my own machines and I have not been told since 1915. In regard to the Smith incubator in that church, "The only thing I would say, it is like the one I got. I simply think I knew that much." The incubator in the church did not look like the Smith incubator I now use—the outside appearances differed.

The fans were in a frame, or roof, or kind of door, and I do not remember how far down it extended, but there was a hole with air blowing out through, straight above the center fan, which I could see simply by looking upward. You could stand on the floor of the chamber and see the intake, if you had light in the machine. In saying that the trays turned to a 45° angle, I am merely estimating that. I tilted them and would naturally think that is about what they were. I was not paid by Dr. Smith for anything I did around the incubator in 1915. I was on a visit looking around, I was in the machine. He had taken me in, showed me the incubator. I cannot say whether that was the same machine he had brought from Attica in 1913, and I know nothing more about that except that I heard somebody say he moved his machine and he was in business in Cleveland. No doubt he moved it from Attica, although I do not know about that. I cannot say how long Dr. Smith had been in business in Cleveland. He was in Cleveland when I engaged

(Deposition of Volney L. Graham)

eggs for him. I know the name of one customer he obtained eggs from before 1915. That man's name is Frank Shute. I did not ship any eggs to Dr. Smith before 1915, but arranged for some the fall of the preceding year, but made no shipments at that time.

"XQ226 While you were about this machine did you see any chicks actually hatch?

A Actually hatch, I would say yes, I would see them when they were in the trays.

XQ227 Do you know how long they had been in the hatching trays?

A How long they had been in there?

XQ228 Yes.

A Why, the shells and everything would show that they hatched there.

XQ229 Now, you saw the chicks actually hatch?

A Yes, come out of the shell.

XQ230 Where were these trays located?

A In the bottom.

XQ231 How many of those were used for hatching purposes?

A Three trays deep, this way, and as long as the machine was this way.

XQ232 How many hatchings did you see taken off while you were there?

A I imagine there were two."

I do not know how long those eggs had been in the hatching trays, and as to knowing where those eggs came from I did not take them out of the racks and put them down there. I saw boys working in the machine moving eggs downward. I would naturally see that happen. I

(Deposition of Volney L. Graham)

would think the eggs had been in the hatching trays for three days, and at the time I was in the hatchery they mentioned that fact. I saw them taking them out of the racks and putting them down below. I was only around the hatchery five days, and only a few minutes a day.

Two partners compose the Graham White Leghorn Farm—myself and W. A. Little. Dr. Smith has no interest in it.

"XQ250 After you left this old church building on this visit in 1915, did you continue to ship eggs to Doctor Smith during the rest of the season?

A Not after that hatching season.

XQ251 I mean during the rest of that hatching season?

A Well, I don't just remember that.

XQ252 So that all the eggs you shipped him was before or during this visit in 1915, for that season?

A Yes, sir."

"XQ253 Are you indebted to Mr. Smith or to the Smith Incubator Company at this time for any Smith incubator?

A I don't think so. If I do they never told me about it.

XQ254 What sort of door do you say this was leading into the chambers in 1915?"

An ordinary sized door led into the incubator, but I do not know whether or not it was left open a part of the time during the hatching process.

I am shown an entry in the bank book which represents a check given to my cousin, R. C. Graham. I do not know when or where the check was given to him. I was

(Deposition of Volney L. Graham)

at the hatchery when I gave the other check to Dr. Smith. The Farmers & Merchants Bank was formerly located in Nevada, but no longer exists. Plaintiffs' Exhibit A-1 indicates that I gave the check to Mr. S. B. Smith on June 4, 1915, and the check to R. C. Graham on June 14, and the check to the Farmers & Merchants Bank on June 15. I do not remember where I was when those checks were made. The next entry in the book is a check to Kuenzli Brothers for $12.40, bearing date of June 16. I do not know where I was when I gave out that check, probably at the hardware store at Nevada. I don't know. The next entry is a check in the amount of $5.04 to Orwiler & Armstrong dated June 16. I do not know where I was when I gave out that check.

"XQ282 How is it you remember where you were when you gave Mr. Smith this check for $10.00, as you testified?

A Why, I was at the hatchery, and had money in the Farmers & Merchants Bank and gave the check for it.

XQ283 Why is it you remember where you were when you gave that check out and you don't remember where you were when you gave these others?

A Because I was up there at that time.

XQ284 You don't know where you were when you gave these others out?

A Why, of course I don't. But I know I made a visit up there at that time. The book shows it.

XQ285 The book doesn't say where you were when you made that check?

A No, of course it don't.

XQ286 Why is it you remember where you were?

(Deposition of Volney L. Graham)

A Why, because I needed the money when I was here at that time, I wanted the money.

XQ287 Can you then state why you can't remember where you were when you gave these other checks?

A No, because I was doing business with him at that time and made the trip up here in particular."

This book, plaintiffs' Exhibit A-1, has been kept in my home all the time. I do not know what are the last entries in it and I do not remember when they were made. When I made that visit to Cleveland I stayed with a Mr. Delaney, who lived back of the hatchery. I am now doing business with the Nevada Deposit Bank and the First National at Upper Sandusky and have a bank book but it does not show the names of the men and the checks like the other one does. The last entry in the book reads "To new book", but the date of that entry does not appear and I cannot say when it was made. The last check was made to Jim Ramey, but there is no date given.

"XQ301 Why isn't there any date there?

A That was his fault.

XQ302 You mean that he didn't enter it?

A Sure didn't or it would be there.

XQ303 Mr. Ramey made some of the entries in the book?

A No, the Farmers & Merchants Bank man that took care of the bank business at Nevada.

XQ304 Do I understand all the entries in this book were made by the Farmers & Merchants Bank?

A Naturally they was as the checks came in.

XQ305 So this is not your handwriting in the bank book?

(Deposition of Volney L. Graham)

A God, no, if you would see some of mine you wouldn't call that mine. In fact, I can't write that good."

I do not know whether this book shows the monthly balances. I have a lot more just like it here in my grip if you want to see them. The Farmers & Merchants Bank went out of business more than two years ago, but I do not know the exact year, nor do I know when I quit doing business with them. Some of the officers of that bank were Charlie Chatlin, and a Mr. Burnside, who lives in Nevada. I did business with a Mr. W. A. Wolfe, who operates a tire store in Nevada at the present time.

"XQ318 None of these entries in here indicate where you were at the time the various checks were made out, is that right?

A How is that—nothing with the exception that I knew I was at the hatchery.

XQ318 None of them indicate it in the book?

A How?

XQ320 None of these entries indicate it in the book?

A It don't say where it was, no, but I knew where I was when I done that.

XQ321 Do you know where you were when you made out any of these other checks in here?

A No, sir.

XQ322 You only know where you were when you made the one Smith check?

A Yes, sir, I do know that in particular.

XQ323 And that is the only one you know about?

A Yes, sir."

(Deposition of Volney L. Graham)

Referring to the book, plaintiffs' Exhibit A-2, my wife made those entries. I watched some of them made because I was willing to learn something from my wife. I think she used her own system when she made those entries, at least she told me that she thought that was the way to do it.

"XQ329 Did she go into an explanation of how she did it?

A She used to do that around in kind of a small way.

XQ330 What did she tell you about the method, and what was the method she used?

A Oh, she didn't tell me. I don't remember. It wouldn't do me no good to tell me.

XQ331 So you don't know how often this book was kept or what method was used, is that right?

A Yes, I don't remember; she might have told me at the time. I don't remember."

I am using one Smith incubator now and I have never used any other kind.

RE-DIRECT EXAMINATION

BY MR. ELY:

The entries in this bank book were made at the Farmers & Merchants Bank.

"RDQ335 What was their custom with respect to entering these checks, what was their custom or what was their practice?

A Well, now, I just couldn't say, Mister, because W. A. Wolf handled that book, and he is living today. He would be the man that could tell you more about the system of that book, because I don't know it."

(Deposition of Volney L. Graham)

The entries were made at the bank but I kept the book at home. I am asked what the entries on the right-hand side of the page represent.

"A Edward Sheckler is the Sheckler farm. D. Flock was a groceryman in Wyandotte I bought groceries of. Mr. Flock, I gave him a check for 3.47 and it went the rounds and Mr. Wolf, when that check would come in, he would cash it and he would put the man's name on the book that I gave the check to, for groceries or whatever it might be."

The dates appear before the names and I think were entered as of the date of issuance. W. A. Wolfe was the Cashier of the Farmers & Merchants Bank, and he kept the book correctly so far as I know. I trusted him to do it and that is what he did. I thought he was an honest man.

The time I saw the Smith incubator at Cleveland in June, 1915, was my first visit to that city. My wife and daughter accompanied me. The latter's name is Elizabeth and she was born the 12th of March, 1915. I did not set any eggs in the incubator at that time, but I saw them put in and I counted chicks. I was at Smith's and slept at Delaney's, and went with the boys to the express office where the shipping was done. In all I was around the incubator for five days and spent my time each day between there and Delaney's. That visit to the hatchery made quite an impression on me. The reason I remember

(Deposition of Mrs. Jessie Graham.)

the issuance of that check to Dr. Smith on June 4th was that I was in the hatchery at that time and I needed money and I offered to give him the check if he would let me have ten dollars cash. That is the entry which appears in the book.

RE-CROSS EXAMINATION

BY MR. TAULBEE:

There are twenty other entries on the same page of this book, plaintiffs' Exhibit A-1, where the Smith check entry appears. Some of those were egg check entries and issued to Kuenzli Brothers, Orwiler & Armstrong, A. Flock and Jury. I don't know whether they are on that page or not, but they are in the book. The check to Mrs. Walcutt was for eggs, but I do not know for how many, or when they were delivered. The check to Shemer & Hilborn was for groceries. John Graham is my father and the check to him, I suppose, covers a little money I borrowed from him when I was hard up. At least, I imagine that is what it related to. The check to Mrs. B. K. Hoover was for white Wyandotte eggs which were delivered in 1915, because the check says so. I have no independent recollection of that.

RE-DIRECT EXAMINATION

BY MR. ELY:

The eggs purchased from Mrs. Walcutt and Mrs. Hoover were for Dr. Smith.

(Deposition of Mrs. Jessie Graham)

MRS. JESSIE GRAHAM,

being called as a witness by plaintiffs, and first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. ELY:

I am the wife of the Mr. Graham who testified this morning. My husband commenced purchasing and shipping eggs to Dr. Smith in March, 1915. I fix that date because my daughter was born the 12th of that month and year, and when she was a few days old I got up from bed and wrote down the number of eggs, the breed of chicks and the price paid per dozen, placed it in an envelope and sent it to the Smith Standard Hatchery Company. Plaintiffs' Exhibit A-2 is the book I kept. With the exception of the entry appearing at the top of page 55 all of the entries in that book, which refer to eggs, are mine. Each day my husband would write out on a slip of paper the kind of eggs and price per dozen of the eggs he had shipped and I made my entries therefrom. The book shows correctly the number of eggs that were purchased and sent to the Smith Standard Company on West Madison Avenue at Cleveland, Ohio. Since those entries were made the book has been in my possession.

(Counsel for plaintiffs then offered in evidence the above referred to record book and asked that it be marked Plaintiffs' Exhibit A-2, and to which counsel for defendant objected on the ground that it was not the best evidence, not properly proved or identified, immaterial, irrelevant and incompetent.)

(Deposition of Mrs. Jessie Graham)

As I said, the book shows the first purchase of eggs from Dr. Smith to have been made March 15, 1915. The entry for that date shows 28 cents was paid per dozen and a case containing thirty dozen equalled $8.40. The book does not indicate what kind of eggs those were. An entry at the top of the column indicates that one case were white Wyandotte. The first Barred Rocks were shipped March 17, five and a half cases at 26 cents per dozen, equalling $42.90. Two cases of Black Minorcas were shipped the 15th of March, at 26 cents per dozen, equalling $15.60. White Leghorns were shipped on March 15. The entries on page 56 read "Mixed Mar. 15, six cases @ 25¢, $45.00." On that date there were no eggs from Rhode Island Reds, Buff Leghorns or Brown Leghorns.

I visited the Smith Hatchery at Cleveland, Ohio, in June of 1915, and I fix that date in several ways. My daughter was not quite three months old when that visit was made. Another way is that my husband came away from home a little short of money and Dr. Smith cashed a check for him for ten dollars, which shows in the bank book under date of June 4th. This check was issued to S. B. Smith for $10.00. My three daughters, including my daughter Elizabeth, my husband and myself made the trip and we stayed at Mrs. Delaney's, which was located near the hatchery. I visited the hatchery several times and was taken into the incubator by Dr. Smith when it was in the process of hatching eggs, and to a certain extent he explained how it operated. I observed the interior construction of the machine. It was just like walking into a small sized room with racks on both sides

(Deposition of Mrs. Jessie Graham)

of it, a curtain hung before those racks and in those racks were trays of eggs. You would step inside and shut the door and feel quite a breeze, with enough air entering from the top of the machine to agitate the curtains behind which the air went and across the eggs. I saw the eggs after they were in the machine and I saw chicks being hatched from the eggs in the machine in the trays closest to the floor which were full of White Leghorn chicks.

"A I didn't count the trays but there were trays pulled out like,—a row of trays, all of them with chicks in, I suppose. I could hear them peep before he pulled out two trays, and they were full of White Leghorn chicks.

Q43 Who do you mean by 'he'?

A Dr. Smith.

Q44 Did you observe any fans in this incubator?

A Yes, sir.

Q45 Where were the fans located?

A In the top of the machine.

Q46 Do you remember how many fans there were?

A No.

Q47 Did the Dr. explain to you how the eggs were set?

A Yes."

"Q48 What did he tell you?

MR. TAULBEE: I object to what Dr. Smith told the witness.

MR. ELY: Answering this objection, it is of course pertinent to inquire as to any disclosures by Dr. Smith as well as matter establishing public use.

MR. TAULBEE: Do you intend to put Dr. Smith on?

(Deposition of Mrs. Jessie Graham)

MR. ELY: I don't know whether I do or not.

MR. TAULBEE: He is not included in any of these notices. Therefore, I object to what Dr. Smith told her as being hearsay.

Q49 Will you go ahead and answer that question.

A Mr. Smith told me that they were placed in the trays and placed in the top of the machine, in the racks, and as incubation advanced they were lowered until it was time for them to hatch they were placed in the lower rack. That is as much as I remember."

When I saw the incubator in operation in 1915 the trays were filled with eggs which were in various stages of incubation. We were at Dr. Smith's the greater part of the week and I was in the incubator several times. We then returned to our home and, because the season was closed, my husband bought no more eggs for Dr. Smith until the next year, and continued so to do for several years. The purchases of those eggs are in this book, plaintiff's Exhibit A-2, in my hand writing.

CROSS EXAMINATION

BY MR. TAULBEE:

I could tell by the appearance of eggs in the incubator that they were in various stages of incubation. A fresh egg shows no change in a certain number of hours, but an egg that has been in several days, if it is fertile, has a much different appearance. The blood lines have started and, if you examine one that has been in still longer, you will see that the chick is further developed. The egg must be held before a light, that is the way we did and the way we do now, and Dr. Smith showed me several different staged eggs, which he took from trays

(Deposition of Mrs. Jessie Graham)

at different heights. I could not tell merely by looking at the eggs and without handling them what stage they were in. I did not handle them because Dr. Smith took some from the trays and tested them. I saw him take them out of the trays at different heights. I asked him to do that because I was interested. I know that a number of the eggs, which we sent to Dr. Smith, were hatched there. I could tell that by the tags on the trays, bearing the name of the party they were purchased from. I purchased some of those eggs for Dr. Smith in 1915 and again saw them in the machine. I can't say how many such trays I saw in the machine, but there were quite a number of them. There may have been more than ten trays but I did not count them. I did not, of course, see all of the eggs being hatched which we had shipped to Dr. Smith, but we were told that they had been hatched in that incubator and we saw the eggs in there which actually bore our name and saw others placed in trays ready for the machine. Of course, as to the greater portion of the shipments of eggs which we had made to Dr. Smith, I do not know where they were handled, where they were placed, or where they were hatched.

"XQ88 How did you get into the egg chamber in this hatchery?

A Opened the door and walked in.

XQ89 Did you leave that door open after you went in?

A No.

XQ90 When, then, did you experience when you got in the chamber, what did you do?

A Quite a current of air in the machine.

(Deposition of Mrs. Jessie Graham)

XQ91 What sort of a current of air was that?

A Fresh air.

XQ92 Cold air?

A Not very, not very cold.

XQ93 Not very cold?

A No.

XQ94 Cool air, though?

A Yes, it was cool air, fresh air.

XQ95 Did that flow around in there, did you actually feel it?

A Moved your hair about your face.

XQ96 All around your face?

A Unless you had a hair net on."

A portion of that air passed out as fresh air was drawn in, or at least that is the way it was explained to me at that time. You could not see the air but you could feel it and I could see an opening in the top of the machine where fresh air came in. That opening was near the center of the machine in the top part of it and, as I recall it, was rectangular in shape. I cannot even estimate the size of that opening, although, as I recall it, it was about the size of this book, plaintiffs' Exhibit A-2. The incubator also contained two spaces for the emission of foul air at opposite sides thereof and close to the top. They were less than a foot from the top, and I think there were two of those openings and they were smaller than the fresh air opening. I knew they were meant for fresh air because the fans took the fresh air that was brought in at the ceiling and forced it through the machine. I know that because I could feel the air circulated by the

motion of the fans. The air had the appearance of dropping to the floor and going up back of the curtain, which I could determine by the sense of touch—by the feel of the air as it went past me. I could see the curtain moving. I put my hand back of the curtain and I could feel the air coming up and striking on my palm. I actually did that and that is how I know. I had to put my hand there and hold the curtain out to look back. My purpose in doing that was to see how the eggs were arranged. I was interested in the hatchery business and wanted to learn all I could about it. I have not since been told that was the way the air circulated, but I have operated an incubator which works on the same principle. In speaking of these features I haven't had our Smith incubator in mind, but since then I know that those things are the result of that current of air, but that was my first experience in an incubator and I was naturally interested.

Since my visit to Cleveland, which was the only time I saw that incubator, I have operated a Smith machine. It was in 1915, that was the year, and I have not visited it any time since. I remember all of the above features about that Cleveland incubator from having been there one time in 1915. I did not see my husband give Dr. Smith that ten dollar check, but I know that occurred because he gave me some money and told me he had had Dr. Smith cash a check for him and asked if there was anything I wanted to buy at the stores. I saw the check for the first time when it returned cancelled. This was given here in Cleveland during that time, but I do not know whether it was given to him at the hatchery or at his home, or somewhere else.

(Deposition of Mrs. Jessie Graham)

I have said that this book, plaintiffs' Exhibit A-2, was made up from slips of paper given me by my husband. Those slips of paper have been destroyed, although I saved them and the checks for a number of years. I am shown plaintiffs' Exhibit A-1 and the entry therein which has been checked indicates the ten dollar check which Dr. Smith cashed for my husband. The date thereof, June 4, indicates the date of the check and the day it was given to Dr. Smith and not the day the check was paid by the bank. That was the custom of the Farmers & Merchants Banking Company in making those entries in that book. That check has been destroyed and I do not know when the bank paid it, or when it was charged to our account. As I said all of the checks referred to in that book have been destroyed.

"XQ160 Don't you know as a matter of fact, Mrs. Graham, that is the date that the check was paid by the bank, this June 4 opposite 'S. B. Smith'?

A No, sir, I think not.

XQ161 In other words, if your husband had dated a check in 1910, do you think that that date would appear on this left column of this bank book?

A The bank we did business with at that time, the cashier of that bank, Mr. Wolf, said during the egg season his entire Sundays were taken in arranging my husband's checks in rotation and putting them in this bank book by rotation; he meant as my husband dated them. He said he would put in his entire Sundays working during the busy egg buying season on my husband's bank book.

(Deposition of Mrs. Jessie Graham)

XQ162 So that in your opinion if the check had been dated 1910 about the time of this Smith entry it would have been put down in rotation around here?

A Yes, sir."

The last entry in that book is dated March 13, 1916. The book has since been in my possession and I put it aside when I destroyed the checks. I made a practice of keeping all the bank books and we have a number of them subsequent to this one, but I don't know whether we have all of them. I do know that the first bank book was lost. We now bank at the Nevada Deposit Bank, which has a different system of recording the checks and we do not have bank books. As I said the bank book preceding this one was lost. There is nothing in this book to indicate when Dr. Smith may have cashed the check given him by my husband, or when it was cleared through the bank and I cannot determine that because the check was destroyed.

I have turned to pages 54 and 55 of this record book, plaintiffs' Exhibit A-2. The writing at the top of the right-hand page 54, which reads " "Barred Rock" is the same writing as on the left-hand side of that page at the top. These two writings differ in the way they slant. One I would call typovertical and the other is the old Spencerian which I learned when I first went to school and it slants to the right. I have this minute written both styles on a slip of paper so as to prove that I can do so. The word "Smith" at the top of page 54, and the words "Smith Standard Co" are in my hand writing. The word "Smith" at the top of page 55 is in my husband's hand and I see a difference in that and the word

(Deposition of Mrs. Jessie Graham)

"Smith" on the other page where my husband fails to close the bottom of his "m". The words "White Leghorns", "month", "Day", "black M" at the top of the page are in my hand writing. Our entire shipments of eggs to Dr. Smith in 1915 are recorded on pages 54, 55, 56 and 57 of this book. 58 indicates the checks which were paid us by the Smith Standard Company. Page 59 refers to shipments to Dr. Smith during 1915. It is not dated but I know the year because of the change that I made when I started in the next year to keep the account.

"XQ205 There is nothing on page 59, is there, to indicate the date, or year, I mean?

A No, sir, other than knowing.

XQ206 And what is there on page 54 to indicate the year?

A That is the first year we shipped to them.

XQ207 Is there anything on here to indicate the year 1915?

A 1915, because it is our first shipments to him, our first shipment was made in the year 1915.

XQ208 Yes, but is there anything on page 54 showing the year that these entries are supposed to cover?

A The year isn't down.

XQ209 Is there anything on page 55 to show the year?

A Not the year.

XQ210 Or on page 56?

A No, sir.

XQ211 Or on 57?

A No.

(Deposition of Mrs. Jessie Graham)

XQ212 So it is merely from your recollection, after all, that you think those pages cover that particular year?

A I know they do.

XQ213 There is nothing on the book, though, to show that?

A No. As you go further you will find the following years."

This book has pages covered with figures preceding and following the entries above referred to. My husband used this book in his butcher shop and it was from there I obtained it. A great many of the entries, as to the butcher shop business were made by the help in the shop, and at the shop, so that necessarily it was out of my possession before 1915, and since when it has been in my possession. The drawings on page 108 were in the book when I began to keep my account in it. The book skips from that page 108 to page 157. I cut out blank pages between those numbers and gave them to my daughter to figure on. The book is, therefore, not in its complete original condition. The pages also skip from 104 to 107, or, in other words, pages 105 and 106 are missing. It also skips from pages 108 to 157 and from 164 to 181.

The book contains entries during 1918 covering business with the Smith Company and I refer to pages 74 to 83, both inclusive. The entries on pages 84 and 85 represent a ledger account previous to 1915.

"XQ229 How can you tell that?

A By the entries.

XQ230 Are there any dates on them or years showing?

(Deposition of Mrs. Jessie Graham)

A No, years, no.

XQ231 So you are relying on your recollection?

A Yes, sir."

Pages 74 to 83 relate to the year 1918, but the only date is on the page where I opened the account for that year, to-wit, page 74, in my own hand-writing. All of the figures on page 84 are in my hand. Part of pages 49 and 50 are missing and pages 61 and 62 are torn out also. On the portion of page 61 which remains are the two words "Standard Company" and at the top of page 83 appears the words "Smith Standard Company." I do not know what became of pages 61 and 62.

(Whereupon counsel for plaintiffs offered in evidence as plaintiffs' Exhibit A-3, the paper on which the witness wrote "W. Wyandottes" and "Barred Rocks".

RE-DIRECT EXAMINATION

BY MR. ELY:

My daughter was born on March 12, 1915, which was about three days prior to the first shipment of eggs made to Dr. Smith and that circumstance is fixed in my mind by the difficulty I had in making out the report, as I was still in bed at that time.

RE-CROSS EXAMINATION

BY MR. TAULBEE:

"RXQ250 What connection did the birth of your daughter have to your going to Cleveland so that you connect the two dates as you have said?

A Well, they had no connection but I know that she was a small baby at that time and that fixed the year in my mind.

(Deposition of George Cugley)

RXQ251 In other words, you know that she was a small baby in 1915?

A Yes, sir.

RXQ252 But that had nothing to do with your going to Cleveland, did it?

A No, sir."

(Whereupon counsel for defendant again renewed his objection to the introduction in evidence of plaintiffs' Exhibit A-2 upon the grounds that the said book is incomplete, does not comprise all of the original pages, has not been in possession of witness at all times, is not the best evidence and further is incompetent, irrelevant and immaterial.)

GEORGE CUGLEY,

being called by plaintiffs and first duly sworn, testifies as follows:

DIRECT EXAMINATION

BY MR. ELY:

I am 52 years old, reside at Springfield, Ohio, and am chairman of the board of directors of the Buckeye Incubator Company of that city. I have been associated with that company for twenty-one years, beginning in 1909 and have held successively the offices of President, Vice-president and Chairman of the Board. The company has sold incubators during the entire time I have been connected with them.

I first met Dr. S. B. Smith, one of the plaintiffs herein, in July, 1915. Someone had told me about Doctor Smith's mammoth incubator and also of his coal burning

(Deposition of George Cugley)

brooder, which I had also seen advertised, and I went to Cleveland in about July, sometime in July of 1915 first, to negotiate with Doctor Smith for the sale of his coal burning brooder, and, secondly, to see his mammoth incubator. My memory is refreshed on that point by the fact of the contract which the Buckeye Incubator Company made with Dr. Smith in 1915 covering the sale of his coal burning brooder. I have the contract before me dated August 5, 1915, which was executed for the Smith Standard Company by Samuel B. Smith, and for the Incubator Company by myself as President.

(Whereupon, over the objection of defendant, counsel for plaintiffs offered in evidence the contract just produced by witness as plaintiffs' Exhibit A-4)

That contract was made subsequent to my visit to Cleveland, at which time I first met Dr. Smith and which meeting occurred sometime in July. It was during that visit that I met Dr. Smith at the old church where he was manufacturing the brooders and also where he had his incubator. It was at that time that I was shown Dr. Smith's incubator and my recollection of the layout is quite distinct. The incubator was composed of three compartments, which were operated from a central heating plant, each compartment holding approximately 50,000 eggs. I was taken into one of the compartments by Dr. Smith, who showed me the incubator and explained its operation. The incubator had a central corridor with fans in the ceiling of the corridor with curtains on both sides and tiers of trays behind those curtains, which extended down to the upper portion of the hatching trays. Dr. Smith explained to me the method of operation of

(Deposition of George Cugley)

the incubator, which was extremely interesting to me because, up until that time, it had been my positive opinion that it was not possible satisfactorily to incubate eggs that were superimposed with more than one tier. I was extremely interested in the manner in which the incubator operated and Dr. Smith explained to me that the eggs were started in the top three trays or stationary racks, and at the end of three days were transferred into the tilting racks and then progressively moved from the top of the incubator to the bottom and then on the 18th day they were transferred from the tilting racks into the hatching trays. When I saw the incubator the trays were all in position, there being three stationary trays at the top with fifteen trays in the tilting racks below and still lower three hatching stationary trays. The tilting racks were suspended. They were constructed of two movable side members with cross pieces pivoted thereto and suspended from the center of the rack so that they could be tilted by raising and lowering the side members. The three 16″ fans were located in the ceiling of the central corridor of each compartment. The curtains were suspended from close to the ceiling of the room and extended down to a point at about level with the top of the hatching trays.

(The witness then was asked what Dr. Smith had explained to him about the currents of air in the machine and as to which question counsel for defendant repeated his objection upon the ground of hearsay evidence.)

Dr. Smith explained that the air was circulated continuously down through the central corridor, under the curtain and up through the eggs into the compartment

above the eggs, and then drawn into the fan and again recirculated continuously in that manner.

During my first visit I did not see any openings in the ceilings of the incubator compartments. My negotiations with Dr. Smith, as I have said, concerning the brooder, resulted in this contract, plaintiffs' Exhibit A-4.

I next saw the Cleveland incubator in November or December of that same year, 1915, when I returned to Cleveland to talk to Dr. Smith about delayed deliveries on the brooders. He was then manufacturing these brooders and we were selling them. At that time Dr. Smith again showed me his incubators and opened up the entrance to the upper compartment of his incubator and showed me in detail the inlets for the fresh air and the outlets for the foul air. He had not thus opened up the incubator during my first visit. He again explained to me its operation but in greater detail than during my first visit. Meanwhile, or between my first and second visits, I had told my Springfield associates about this very unusual incubator, which was revolutionary in that it was accomplishing the thing that we had always regarded as impossible, and I discussed with them the commercial possibilities of an incubator of that type. Thereafter, during my second visit to Cleveland, I discussed with Dr. Smith the possibility of making an arrangement for the Buckeye Incubator Company to make his mammoth type of machine.

I saw the Cleveland incubator several times while it was in operation during the spring of 1916, the first visit that year being about the month of March. I was in the incubator itself several times during my stay. Alto-

(Deposition of George Cugley)

gether I was in it for an hour or an hour and a half during that visit in 1916, observing the hatching operations and the manner in which the eggs were set. As I have said, eggs were started at the top and moved progressively towards the bottom, as the incubation progressed, so that the eggs were actually hatched in the trays at the bottom. Dr. Smith showed me around during that visit and I saw chicks actually being hatched. I again discussed with him the operation of the machine, as to which there had been no changes that I could observe.

"Q56 Now, did you observe the operation of the fans when you were there in 1916?

A I did.

Q57 And on what trip was it you observed the operation of the fans?

A The fans were in operation—well, as a matter of fact, Dr. Smith had the fans in operation the first time I saw the incubator.

Q58 Now, what the result of that operation, did you stand in the incubator while the fans were running?

A I did."

By standing in the incubator I could observe a very noticeable current of air, which during my July 1915 visit was a very acceptable cooling operation, as there was no heat in the incubator. I do not recall whether the fans were operated in November or December of 1915 during my visit. The fans operated during my 1916 visit exactly in the same manner as they did during my first visit. They were driving air down to the floor of the incubator with considerable velocity. The air would mushroom at the floor, go below and under the curtains,

(Deposition of George Cugley)

up through the eggs into the upper chamber where it would be drawn back into the fans and again recirculated. I did not observe any openings in the ceiling of the incubator in March, 1916. I would say that during that year I saw the incubator in operation three or four times. My observations indicated that the eggs were hatching very satisfactorily and Dr. Smith told me he was getting somewhere between sixty to sixty-five percent. I was very favorably impressed with the operation of the machine and so much so that I still further negotiated with Dr. Smith for the right to make the incubator and during my several visits I familiarized myself at each visit more both from the mechanical standpoint and from the basic method of operation and it was finally during the last visit in the spring of 1916 that I obtained Dr. Smith's permission to build some small units at Springfield, Ohio, through the Buckeye Incubator Company. We, thereafter, started to build some small units late in 1916 and finished them in the early part of 1917, and operated them the latter year. I consulted with Dr. Smith about building those incubators and, as a result of the tests we made, the officers of the Buckeye Incubator Company were convinced of the commerical possibilities of that type of incubator, all of which resulted in further negotiations with Dr. Smith, and a license agreement was entered into under date of June, 1917. I am shown the agreement to which I refer and which was executed by Samuel B. Smith and the Buckeye Incubator Company, through myself as president. That is the agreement under which I commenced operating under the Smith patent.

(Deposition of George Cugley)

(Whereupon counsel*f* for plaintiffs offered in evidence the above mentioned agreement as plaintiffs' Exhibit A-5)

I have had considerable experience in the manufacture and sale of incubators. In 1915 or 1916 a thirty percent hatch would not have been considered successful because the revenue would hardly pay for the eggs. Since my association with the Buckeye Incubator Company we have always considered a sixty percent hatch necessary to commercial success and that was also the opinion of the trade.

CROSS EXAMINATION

BY MR. TAULBEE:

The Buckeye Incubator Company is now operating under a license agreement for the use of the three Smith patents, one of which covers the incubator proper and which has three method claims and two structural claims. that is patent No. 1,262,860, dated April 16, 1918, and is the patent herein sued upon. Then there is another patent covering the construction of the egg tray racks and still a third patent covering another system of tray racks. Our agreement is an exclusive license agreement covering certain sizes. Dr. Smith is still connected with the Smith Incubator Company in the capacity of president. Our present license agreement was executed sometime in 1927. Plaintiffs' Exhibit A-5, dated June 4, 1917, is a license agreement from Samuel B. Smith to the Buckeye Incubator Company relating to the manufacture of an incubator up to a limited capacity. At that time the Smith Incubator Company had not been formed. At the time this contract was made the Smith patent No. 1,262,860 was still in application. We made incubators under the

(Deposition of George Cugley)

direction of Dr. Smith, as I have said, beginning in 1916 and finished the first ones the early part of 1917. Dr. Smith assisted in a general way in helping us to design these machines, and we conferred with him several times. There were three of those first machines built and one of them was designated as No. 6. Those first three machines were never sold and our only purpose in making them was to develop a commercial type. We considered at that time that Dr. Smith had produced an incubator on a commercial scale, so far as the method of incubation was concerned, and it was only a question of arriving at the particular form in which it should be sold. In other words, we considered that Dr. Smith at that time had developed a successful commercial method of incubation and it was after that only a question of what construction would be used, so far as the case was concerned. I mean by that, its dimensions and general proportions as limited by the size of the trays and the number of trays. We consulted with Dr. Smith about the size of fans and made the openings of the size that he suggested. I do not think at that time that Dr. Smith suggested a specific size of fan, size of opening or size of chamber. So far as the size of the fans and openings was concerned it was not a matter of experimentation because, in the number 6 machine, those were never changed. These three test machines were constructed to determine the particular style of incubator that would be used in the construction of the machines to the limit of the capacity covered by our license. By "style of machine" I mean the character of the doors, general style of the case and the size of the trays and character of the heater. The position of the

(Deposition of George Cugley)

heater had been quite well predetermined. Those were the only questions that we had to decide in building those three machines in which we actually hatched eggs. It was necessary to hatch eggs so that we could know that all of the details were going to operate satisfactorily to the customer. There was never any question in our minds after seeing the results obtained from the large unit of 50,000 egg capacity as to what would happen in the small unit. All we knew about the percentage of hatch in the large incubator at Cleveland was what Dr. Smith had told us.

"I relied on also what I saw.

XQ129 All that you saw were a few chicks being hatched?

A Not a few.

XQ130 Did you count them?

A No, I saw some hatches when the hatches were completed, and the trays were filled, in many instances, with chicks, to overflowing.

XQ131 In some instances they were not filled?

A Depending upon the character of the eggs.

XQ132 And other things?

A No, I don't think there were any other elements that entered into it. The eggs were hatching uniformly well throughout the incubator.

XQ133 During the period that you were there that is the only knowledge you have of it, outside of what was told to you?

A I naturally saw the results of the operation."

Our average hatch from the tests of the three machines first made by us ran between sixty and seventy percent

and there were four or five hatches made with those machines, during several of which Dr. Smith and I were present. I have no idea as to what became of those machines. I cannot say as to whether or not they were destroyed or saved, and I do not know definitely they were not sold. One of those machines, as I have said, was referred to as No. 6, which means the model 6.

Thereafter the model No. 6 incubator was put on the market by the Buckeye Incubator Company and represented the first mammoth machine that we had made under those patents. The No. 6 model did not depart any from the first three machines made. They were put on the market in 1918, although they had been made during the fall of the preceding year, and were the only type so made at that time, outside of the three experimental machines. We did experiment with a larger incubator, with a capacity of between seven thousand and ten thousand eggs. The No. 6 type held 2340 eggs. Two experimental machines of the larger capacity were made, one of which eventually became the No. 7 incubator, and which we later began manufacturing the No. 7 for commercial purposes.

Hatching experiments were made with the first two No. 7 machines and during some of which Dr. Smith and I were present. The results from the first models were very satisfactory and produced hatches running between sixty and seventy percent. No. 7's were first put on the market commercially in 1918. The first year we sold thirty-four of them and "They met with generally satisfactory results." We had some complaints about them, as we have with all new models, but generally speaking

(Deposition of George Cugley)

the machines were satisfactory. In the meantime we had been manufacturing the No. 6's.

I remember testifying in the case of Buckeye Incubator Company and S. B. Smith, plaintiffs, vs. D. A. Wolf, defendant, in Equity No. 310, in the District Court of the United States, for the Northern District of Ohio, Western Division, in which proceedings began on or about January 2, 1923. Therein I was asked the following question:

"Referring to some of them giving trouble, what number do you recall that gave any trouble?"

and to which I made answer as follows:

"A. The first lot of the No. 7 machines we built were 31, and the majority of those did not produce satisfactory hatches for our customers."

Since my attention is called to the above testimony my memory is refreshed as to that situation, and I did so testify. I have a rather indistinct recollection of selling some of those No. 7 machines to the C. M. Peters Mill Company, which had some difficulty with the incubators and returned them to us. I don't know whether that company is using Buckeyes, or other incubators, at the present time.

The fans in the first No. 7 incubators proved inadequate and I now would like to correct my testimony and say that the first thirty-one No. 7 Buckeyes which we built gave some trouble to our customers. We attempted to correct the trouble and finally got Dr. Smith into the picture with a view to finding out what was causing the trouble, and after considerable investigation Dr. Smith concluded that the size of the fan was inadequate. The

machines were redesigned and equipped with 16" instead of 12" fans. Dr. Smith had been with us on several occasions when we were designing those incubators and he operated one of them. Those thirty-one No. 7 Buckeyes were made under our license agreement with Dr. Smith and, as I have said, he had conferred with us on several occasions with regard to their construction. Those 31 No. 7's were not entirely satisfactory, although some of them gave quite satisfactory results, but others did not and in that connection I might say that the character of current used in them had a considerable effect on the measure of success, because the different types of fans, the current used would govern the rapidity with which the fans operated. After we discovered this trouble with the thirty-one No. 7's, we advised the trade to open the doors periodically to cool down the machines. We continued to manufacture the No. 7 incubator over a period of years. Changes were made in the No. 7 type that season of 1919. For one thing the dimensions of the central corridor were widened and the incubator was made higher. I do not think the size of the outlet openings was increased but I am not positive on that point. I also do not recall when the number of outlets was increased.

I am asked whether the following question and answer was directed to and made by me, in the case of Buckeye Incubator Company and Samuel B. Smith, Plaintiffs vs. D. A. Wolf, Defendant, Equity No. 310, in the District Court of the United States, Northern District of Ohio, Western Division, at page 23 of the record:

(Deposition of George Cugley)

"You increased the size of the outlet opening, too, did you not?

A. No, sir, not the size of the outlet opening. We did increase the number of outlet openings."

I do not remember testifying as above, but I would not say I did not so testify and I am not at this time prepared to change that testimony.

I am asked whether on page 73 of the record in the aforementioned cause, the following discourse took place between the court and myself:

The Court: "What you did was, as I understood you, was that you increased the number of openings but you didn't increase the size of the outlet?

The Witness: That is my recollection."

I do not remember testifying as above but I will not say that I did not.

The feature that impressed me most upon my first visit to the Smith Hatchery in 1915 was the fact that Dr. Smith was successfully hatching eggs that were superimposed, or, in other words, placed in more than one tier. Our experience as incubator manufacturers had shown us that we had never been able to do that satisfactorily, although we had tried it on several occasions and prior to seeing Dr. Smith's incubator. In those attempts we had placed eggs of the same age in the incubator at one time. It had never occurred to us to use the progressive method of incubation, but we had tried the method of placing trays containing eggs in tiers, one over the other in composing two or three racks. I never heard of staged incubation being used before Dr. Smith, nor had I read any text books on incubation along that method. I think

(Deposition of George Cugley)

there was a book written by Mr. Cyphers on incubation around 1909, but I don't recall the exact title of it, nor do I recall ever having read it. (Objection by plaintiff as not cross examination and outside the scope of the inquiry.) As I said, I was impressed with the ability of Dr. Smith to hatch a large volume of eggs in such a small space.

I have had experience with patents and in reading and understanding the specifications and claims and I have examined the Smith patent No. 1,262,860.

"I say the fact that Doctor Smith was able to successfully incubate the eggs, that were superimposed, thereby enabling the operator to place a large number of eggs in a small space, was the commercial basis of the situation that appealed to me."

I was concerned and impressed with the results attained by Dr. Smith in 1915 rather than with the construction of his incubator. I think I can best explain my impression by saying that when I returned to Springfield I told my associates that in spite of the fact I had seen this incubator and had been told what it was and what it would do, I still didn't believe there was any such animal. In speaking of the results attained by the use of the Smith incubator, as to the percentage of hatch, I meant simply what Dr. Smith told me.

I did not measure the fans upon my first visit to the Smith hatchery in 1915, but I am quite familiar with the 16" size. In fact I made no measurements of any kind during any of these visits to the Smith incubator, nor did I make any tests of the method.

(Deposition of George Cugley)

I am familiar with the old type of incubator which uses a lamp and wherein convection currents are circulated. I do not know whether the hot air in that type of incubator takes a definite course in circulating therein, but it does circulate in a general way.

I know nothing about Dr. Smith's incubator at Attica, Ohio, in 1913 and 1914 and he said nothing about it to me on my first visit to Cleveland. In testifying on my direct examination that a circulation was maintained in the Smith incubator I meant that the air was being moved by the fans. That was all new to me at that time and although I had seen fans circulate air I had not seen them used in an incubator, nor had I ever heard of fans being used in an incubator. I am asked whether or not Dr. Smith ever claimed to me that the use of a fan in an incubator was new or original with him.

Dr. Smith simply explained to me the operation of the incubator and there wasn't any discussion, as I recall it, about anything that had been done before, but my whole impression was that the thing that Dr. Smith was doing was entirely new. I do not recall that during my first visit Dr. Smith actually said that his method of using fans in circulating the air in the incubator was new or original with him. At a later date Dr. Smith unquestionably told me that he was the originator and inventor of that incubator, but "I don't think Dr. Smith ever claimed that he was the original person to use a fan in an incubator."

"XQ246 And in fact you know that he so testified and his counsel maintained that in the Buckeye Incubator

(Deposition of George Cugley)

case against Wolf that we referred to here, in which you testified?

MR. ELY: I object to that as obviously incompetent unless examining counsel shows the witness what he is referring to.

A All right. I afterwards learned that fans had been used by others in incubators.

XQ247 Prior to Doctor Smith?

A Yes, that is, prior to 1915."

I am not sure whether I was present during the entire trial of the aforementioned Buckeye suit against Wolf, and I don't recall whether I heard the arguments of counsel. I am referred to pages 269 and 270 of the record in the aforementioned D. A. Wolf case and I am asked whether I heard Mr. Bowman, attorney for plaintiffs in that case, say:

"Now, I want your Honor to keep in mind that we are not claiming the combination of a fan in an incubator. Our patents do not go that far. We never have maintained in this application such claims. They have introduced the file wrapper. We have never thought that we were the first persons to conceive of a fan being used in an incubator, and we do not maintain that it would be patentable invention necessarily to do it, to simply say that because a fan can be used in an incubator chamber, that we are entitled to cover all ways of doing it; but our patent is very specific in its drawings, I think."

I have no recollection of having heard the above statement by counsel in that case.

(The following question was then directed to the witness.)

(Deposition of George Cugley)

"XQ252 That is consistent, though, with what Dr. Smith told you?"

(Whereupon counsel for plaintiffs objected to the preceding question and at first instructed the witness not to answer any such questions, but later directed the witness to use his own judgment as to such matters, and no answer was made by the witness to the above question.)

I have seen Dr. Smith in the building here today. The Smith patent in suit herein, No. 1,262,860, was one of the two patents involved in the aforementioned case of Buckeye, etc. and S. B. Smith vs. D. A. Wolf. The other patent involved in that case was the one relating to the egg tray structure.

RE-DIRECT EXAMINATION

BY MR. ELY:

We designed the original No. 7 incubator.

My attention is directed to page 82 of the printed record in the aforementioned case of D. A. Wolf vs. Buckeye and Smith and I remember that I testified as follows:

"We did not have any cooperation from Doctor Smith in the designing of the original No. 7 but he did cooperate with us in correcting the trouble, or we discussed the matter with him, and he called my attention to the fact that he did not supply sufficient fans to properly take care of the temperature.

Q. Did he make any suggestions to you about your leaving off his steam that he used in his patent?

A. He did not.

The Court: Leave off what?

(Deposition of George Cugley)

Mr. Kirk: His steam supply for the moisture, which is shown in the patent.

The Witness: Doctor Smith made no suggestions that the ventilation was insufficient; it was the circulation. In the first No. 7's these fans weren't sufficient to maintain a uniform temperature. There were only two fans in the original No. 7 machines and when we redesigned them we put in three fans of a larger size."

The above referred to statements were correct. We had no trouble with the No. 6 type of Buckeye incubator, which was placed on the market before the No. 7 type. After we made changes in the latter type we had no further trouble with them. The number of fans was increased from two to three and the size of each from 12" to 16", and those changes were made at the suggestion of Dr. Smith.

RE-CROSS EXAMINATION

BY MR. TAULBEE:

When the first 31 No. 7 Buckeyes were manufactured I was familiar with the Smith patent in a general way, but I had not made a very close study of it at that time and I do not remember testifying in the aforementioned Buckeye vs. Wolf case that I was familiar with that Smith patent when those No. 7 machines were made. I will not say I did not so testify as above, but I think I said I was familiar with the patent in a general way.

(Whereupon an adjournment was taken until 2 P. M. of December 19, 1930, and after which counsel for plaintiffs announced that at tomorrow's session he would put Dr. S. B. Smith on the stand. It will be noted that plain-

(Deposition of Dr. Samuel B. Smith)

tiffs' Notice of the taking of depositions had not included Dr. Smith.)

(Hearing resumed, 2 P. M. December 19, 1930. Counsel for plaintiffs confirmed verbal notices given counsel for defendant the preceding evening that plaintiffs would proceed to Pacific, Missouri, at termination of this deposition session for the purpose of taking the deposition of George Ruede, a resident of that town and State, such testimony to be taken on Monday, December 22, 1930, at the office of the Pacific Refrigerating Company.)

DR. SAMUEL B. SMITH,

one of the plaintiffs, offered himself as a witness in his own behalf, and first being duly sworn, testifies as follows:

DIRECT EXAMINATION

BY MR. ELY:

I am 59 years old, live at Rocky River and am President of the Smith Incubator Company. I am one of the plaintiffs in this case and the patentee of the patent in suit.

"Q8 Dr. Smith, will you please state when you first practiced the method of incubating a plurality of eggs in superposed layers in a closed chamber having restricted openings for the admission of fresh air and the emission of foul air therefrom, said eggs being in various stages of incubation, said incubation being carried on by the use of a forced draft within the incubator?

MR. TAULBEE: I want to object to the form of the question as not comprising the elements or features of the method claim 1 in suit, or of any of the other

(Deposition of Dr. Samuel B. Smith)

claims of the said patent in suit, as not accurately stating those features and elements, and as being therefore irrelevant, incompetent and immaterial."

My answer to the above question is the hatching season of 1915, which lasts from March 1st until sometime in July. I first practised that method from March or late February, 1915. I practiced the method in the old church at 7918 Madison Avenue, in Cleveland, Ohio. That church contained two rooms, the front one being 25'x40', and the back room was of the same width and about 30' long. The incubators were in the front room. I lived in that back room during my first two years at Cleveland. The incubators were composed of three compartments with about 9½ to 10' x 12' floor space and with a 10' ceiling. "The shell of this incubator was built at Attica in the latter part of 1912 and shipped to Cleveland in sections and assembled after we got it up here. The parts that we intended to use were also manufactured at Attica and shipped up with the incubator, which is not the parts we used in 1915, however."

In 1915 we used the above referred to shell and the parts used in it consisted of three fans in each compartment, or nine fans altogether. There was a corridor through the middle of each compartment with the egg trays, supports, and so on, on each side of that corridor. There were curtains on each side of the corridor. The heating pipes were at the top of the corridor running along each side of the fans, which latter were lengthwise of the corridor. The trays were twenty-one high, all told, there being three stationary trays, fifteen trays in the tilting racks and three trays in the hatching racks,

(Deposition of Dr. Samuel B. Smith)

thus making a total of twenty-one in each column. There was a false ceiling about 13″ from the main ceiling and in which the fans were placed. There was a hole cut in the ceiling and provided with a trap door. Along each side was a joist that supported the false ceiling about 3″ down from the main ceiling, so that when the fans drove the air down the corridor they pulled that air from this compartment formed above the corridor. In other words, the air entering this compartment above the corridor would come over the top of those joists and from out of the space occupied by the eggs. The hatching trays were at the bottom. When the egg trays were tilted a space was left between each column so as to enable the air to pass through more freely. There was a square hole above the center fan in the main ceiling to provide an intake for fresh air and there were two openings above each space occupied by the eggs connected with a metal tube so that the foul air was discharged into the attic of the church.

Eggs were set in those incubators in 1915 twice a week and perhaps during the height of the season every three days. We put three trays in deep at the top and in the stationary tray supports. They would remain there three days and then moved into the tilting racks and thereafter moved down every three days, or twice a week, so that they reached the hatching racks on the 18th day. When trays were moved from the top racks their spaces were taken up with fresh eggs of th next interval. In other words, when the incubator was filled to capacity there would be eggs of all ages from fresh to eggs ready to hatch, three days apart.

(Deposition of Dr. Samuel B. Smith)

From the latter part of February or the first of March until sometime in July, 1915, I operated the incubator and in the manner I have recited. The hatches I obtained would average somewhere between sixty and sixty-five percent. I used the same equipment during the season of 1916 and in 1917 moved to a new building on 74th Street. I conceived this invention during the hatching season of 1914. During the years 1913 and 1914 the hatches were unsatisfactory. There were so many eggs with chicks in that would die just before, or at hatching time, and by using a thermometer we found uneven temperatures, or variations in temperatures, in the various trays. A tray of good eggs would run much higher than a tray that contained fewer fertile eggs. In 1913 and 1914 we were setting eggs all of the same age in one compartment. I made changes in that incubator structure between the season of 1914 and the season of 1915. I have described the 1915 construction. In the 1914 machine the heating pipes were on the floor and there was only one fan in the center of the ceiling, whereas in the 1915 structure there were three fans in each incubator. The trays were suspended from the ceiling by a metal strap and the eggs were placed in bundles of two trays each with a retaining tray on the top thereof. They were then pivoted in those metal traps so that the bundle of trays would revolve when the eggs were turned. There were eight columns of trays on each side of the corridor, leaving a space of about 6" between each column. The addition of the extra fans produced a much greater and better circulation and, by "***** adding the curtains

we were able to direct the current with lower fan capacity than if we would not have had the curtains."

There was no ventilation provided in the ceiling of the 1914 structure but openings were located at the rear of the corridor space. Holes were placed in the top of the 1915 structure for the escape of foul air. In 1914 my hatches ran between forty and forty-five percent, which was not so good as we were doing with the old sectional type of machine, which ran probably five to ten percent more.

In 1913 and 1914 eggs were set all at the same time, or, in other words, the compartment was filled with eggs and they remained there then for three weeks until they hatched; "They never changed or moved in that compartment except to turn them by revolving these bundles of trays; that is in 1913 and 1914."

The temperatures during the last two mentioned years did *no* run so evenly as they did in 1915 and a great many times the door would have to be opened and air blown therethrough with a fan to keep the eggs cool. During the years of 1913 and 1914 we would always have a bunch of eggs left in the trays with dead chicks in them, which we attributed to the uneven temperature and overheating of the eggs. In 1915 we did not have any overheating and did not have to cool the eggs by keeping the door open. By staged incubation is meant putting eggs of different ages in the same compartment.

I first met George Cugley, who testified in this case yesterday, at the old church in July, 1915, when he came to see me in connection with getting the agency for the stove I was manufacturing. Mr. Cugley was then con-

(Deposition of Dr. Samuel B. Smith)

nected with the Buckeye Incubator Company and I reached an agreement with him concerning the brooder stoves and which said agreement is plaintiffs' Exhibit A-4 herein. That is my signature under the words "Smith Standard Company". The date of Mr. Cugley's first visit was sometime in July and prior to the date of the agreement, August 5, 1915. During Mr. Cugley's visit I discussed with him my incubator and the method of hatching and he asked a number of questions pertaining to both and I described both to him. I took him into the incubator with me at that time. I again saw Mr. Cugley in Springfield, Ohio, a couple of weeks later and a month or two later he again came to see me at Cleveland about the stoves. During that second visit we had some discussion about the incubator as he was a manufacturer and I discussed the marketing of my incubators with him. The next season his company built some experimental machines, after watching my incubator during the season of 1916. It was in the year 1917 that my first contract was made with the Buckeye people, a copy of which has been introduced in evidence in this case and marked plaintiffs' Exhibit A-5. That is my signature on that contract.

Claude Hull, who testified in this case yesterday, began to work for me in December 1914. At first he went to the Pittsburgh poultry show with the brooder stove, and next to Madison Square show and then he went on the road for a month or two, after which he returned and worked in the hatchery during the season of 1915. In 1915 he looked after the delivery and shipping of chicks and also worked in the incubator helping take out chicks

(Deposition of Dr. Samuel B. Smith)

and setting eggs. He remained in my employ until the close of that 1915 hatching season.

Mr. Volney Graham, who testified here yesterday, started contracting eggs for me in the latter part of the fall of 1914 and continued shipping eggs to me during the following hatching seasons of 1915, 1916 and possibly 1917. Mr. Graham and his wife visited my plant in Cleveland toward the end of the hatching season in 1915 and I showed them the incubators and I described the method to them.

CROSS EXAMINATION

BY MR. TAULBEE:

I know Mr. Jay Ridebaugh of North Baltimore, Ohio, and who was President of the Ohio Baby Chick Association. I do not recall whether I have ever heard that Mr. Ridebaugh uses incubators manufactured by the Robbins Company, which manufactured defendant's incubator in this said case. Mr. and Mrs. Lynn Carrick, who testified in the case of Buckeye etc. vs. Wolf have been in my employ and I believe they are still, or at least he is. I do not recall anyone using a Robbins incubator in the State of Ohio, although there may be someone. When the instant suit was filed I did not of my own knowledge know of any Robbins users in this State, because I do not go out into the field a great deal. We ourselves used a Robbins incubator at the factory conducting tests. I have never heard of Mr. H. C. Beery, of the Midland Hatchery Company at Frankfort and at Columbus. I know of the Myers Poultry Farm at my former home at Attica, and I believe Myers purchased a Robbins incubator but I don't believe he has used it. I do not know

(Deposition of Dr. Samuel B. Smith)

whether Mr. Edward Snyder, living at Dayton, Ohio, has been using a Robbins incubator. I wouldn't say that at the time we filed this suit no Robbins machines were being used in Ohio. I do not remember whether or not we made any effort to determine that fact. It is not true that we wanted to find no Robbins users in this circuit. The adverse court decision in Buckeye vs. Petersime, 19 Fed. (2nd) 721, I would say had nothing to do with our decision to file this suit in the Southern District of California. After we studied things over we decided to bring the suit in that District. We had no decisions in that circuit.

I have had some experience in reading patent specifications claims and drawings and to some extent I am familiar with the patent in suit. It was in 1915 that I first practiced with an incubator the process of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings and of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage, for the purpose specified.

I did not file with my application for this patent in suit any affidavits which stated I had not used the above process and apparatus prior to 1916. I am shown the

(Deposition of Dr. Samuel B. Smith)

reported decision in the case of Buckeye Incubator Company, et al vs. Wolf, No. 510 in the District Court of the United States, Northern District of Ohio, Western Division, reported in 291 Fed, at page 252 and wherein Judge Westenhaver said at page 260:

"It is worthy of note that Smith in soliciting his patent filed affidavits claiming only that his method and apparatus had been successfully used during the year 1916, and makes no claim of an earlier use."

I do not agree with the above statement of Judge Westenhaver.

(Whereupon, at the request of the witness, his counsel produced a purported copy of the file wrapper of the file in suit.)

In the affidavit filed I claimed there had not been a use more than two years prior to the filing of the applications but I would have to go over these affidavits to see whether or not that is all that is stated in them. My answer to your question is that those affidavits stated that there was no use more than two years prior to the date of application.

"XQ128 Then you answer no to my question.

(Question read by reporter)

A You have so many negatives in there it will take me sometime to answer that. Write the question out, please, so I can see it.

XQ129 What is there you don't understand about that question?

A I would better have you write it out so I can see it."

I am willing to go on record as saying that there was no affidavit with my application for Letters Patent in suit

(Deposition of Dr. Samuel B. Smith)

which stated that there was no successful use of my invention before the year 1916.

(Whereupon counsel for defendant insisted upon a "Yes" or "No" answer to the question and which said question, at the request of the witness, was written out by the notary and presented to the witness, after which the following answer was made: "I did not file affidavits that there was no successful use prior to 1916."

It is not necessary in the practice of my invention that a fan, or fans, restricted openings, curtains, closed chamber and corridor be used.

"You can leave out the curtains and the corridor, but you would need to add other elements.

XQ140 Then you do not consider that in the successful practice of your invention that you need at all curtains or corridors?

A No; they are not necessary to the process of incubation.

XQ141 As to the successful results?

A Yes, sir, to the successful results.

XQ142 They are not necessary. Why, then, did you include them in your patent application and in the allowed Claim 1 of the patent in suit?

MR. ELY: I object to such questions as obviously beyond the scope of the direct examination; improper and incompetent.

A The curtains and corridor were not included in Claim 1 of the patent in suit.

XQ143 Are they referred to in the specifications of that patent?

MR. ELY: I object to it as entirely immaterial.

(Deposition of Dr. Samuel B. Smith)

A Yes, they are referred to in the specifications.

XQ144. Would you then say that a closed chamber, a restricted opening, and a means of circulating, diffusing and maintaining air throughout the chamber are necessary to the operation of your invention?

A Yes, I would say they are necessary.

XQ145 So that there could be no operation or practice without those features; is that right?

A No, it would not be successful.

XQ146 So that any different machine or incubator which did not contain those elements would not successfully operate?

MR. ELY: Objected to as entirely immaterial, what some other incubator might do.

A Well, with the forced draft type those elements would be necessary."

The most important change in the 1915 structure over the incubator used by me in 1913 and 1914 was not the directing of the current by means of curtains in a path upwardly through the tiered eggs so as to progress from the older to the newer eggs. I would say that was a minor change. The most important change in my opinion was increasing the fan capacity. I used the curtains for the first time in 1915, and that was the first year that I also used the three fans so as to direct the current of air in a predetermined path upwardly through the tiers of eggs from the old eggs to the new ones.

1915 was not the first year I had been able to direct air currents over a predetermined course, or path, and I do not remember saying that on my direct examination. I had an incubator in 1906 at Lykens, Ohio, with a com-

partment 12′ square by 6′ high, having a perforated diaphragm at the top about 3″ from the ceiling and having a perforated diaphragm about 3″ from the bottom with a fan on the outside of the machine blowing air into the top and out at the bottom. I incubated eggs in that machine in which the currents of air were directed from the top down through the eggs to the bottom and the mechanism was so arranged that the current could be reversed and sent in the opposite direction. That current was from the top to the bottom and it did not follow a circuitous route. I have never had an incubator in which the air circulated in a straight line; it was always a circuitous path that the air followed because it would go from the fans, through and around the eggs and then back to the fan by means of suction. That occurred in the incubator which I used at Lykens, which contained only one fan. In other words, the fan has suction on one side and pressure on the other.

"XQ174 I will reframe the question. Doctor, did you at any time prior to 1915 so predetermine the course or path of the forced draft so that that draft would follow other than a straight path or course before going between or in or around the eggs in a chamber?

A Write that out. You get so many elements in there I cannot get that straight."

(Question written out by notary and handed to witness.)

My answer to the above question is that the air in the Lykens machine did not follow a straight line or path, it went upward from the fan, across to the top center,

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struck the perforated diaphragm and then proceeded downwardly through the eggs.

The eggs in that Lykens incubator were arranged in tiers of which there were five or six in number. In other words, the eggs were superimposed over one another. There were no corridors between those tiers. The fan was outside the machine and there was no obstruction in the conduit between the fan and the top. The draft from the fan did not go upwardly through a corridor but through a metal tube which extended from the fan to the top of the machine on the outside of the machine. I constructed that Lykens incubator in 1906 and used it for the first time the same year. Various employees helped me in making the incubator, one of whom was H. B. Tippan, who lives at Findlay, Ohio; another employee was Levy Likly, who, I believe, is dead. There was also another whose name I have forgotten. The incubator was made in a building in Lykens, Ohio. One hatch resulted from my use of that incubator but I did not sell any chicks as I obtained only thirty out of thirty thousand eggs, which I attributed to faulty construction of the machine. I mean by "faulty construction" that there was not sufficient speed of the air through the eggs in the incubator. For successful incubation you must have sufficient speed of air. That is a necessity and it is not a matter of experimentation. It is a matter of construction and it can be predetermined according to engineering principles. I would say that no invention resides in determining the speed or velocity of air currents for use in an incubator.

(Deposition of Dr. Samuel B. Smith)

Prior to 1915 I was able to predetermine the course of the path of air circulating in an incubator and which did not pass through a pipe such as I have referred to in my Lykens incubator. I had a machine at Attica, Ohio, in 1912, which I attempted to make one hatch in, but did not finish it. That incubator had a capacity of two thousand eggs and was divided by a partition. The eggs were in two columns on one side of that partition and the heater on the other side. There were ten tiers of eggs elevated about a foot from the bottom of the incubator. The fan was placed in the partition below the eggs, but I am not sure whether the air circulated by going through from the heater through the eggs or around the other way. I cannot say from memory which it was. I do know that air did not blow directly toward the eggs but was blown horizontally below the eggs and then rose up through them. The current of the fan was directed against the wall of the machine and from there deflected up through the eggs. I mean, from there a part of the air would be deflected up through the eggs. The test hatch of three trays used in that Attica incubator consisted of eggs set in trays, each of a different age. The eggs hatched were all of the same age. In setting the test hatch, eggs were taken from another incubator, some of them being two weeks old and others one week old. The former, as I remember it, were placed at the bottom, the week old eggs above them and the fresh eggs at the top. There was one tray in each column, making a total of six trays, so that the fresh, or youngest, eggs were at the top.

(Deposition of Dr. Samuel B. Smith)

I do not remember I ever heard of staged incubation before I started it myself. I am familiar with the old type of hot air incubator. I knew of them several years before I started hatching in 1905, although I never used one of them. In some of those types of incubators a current of air is set up. In fact heat always starts circulation of air if it is not resisted. In 1905, as I said, there were in existence incubators which had a circulation of air throughout the chambers. Air went in at the bottom, up around the lamp where it was heated, on up to the top and was forced out at the bottom and in doing so it went around the eggs and through the spaces between them. Of course, with the forced draft type of incubator a fan recirculates the air which was not true of the small still air type.

"XQ241 Well, proceeding on the premise that the air did circulate in these small, old type incubators, with which you were familiar in 1905, would the addition of a fan to them merely increase the velocity of the air in the egg chamber?

A Yes, it increased the velocity, but what else it would do would be another question.

XQ242 That is a mere mechanical process, increasing the air by means of forced draft?

A Yes, I would say that was mechanical.

XQ243 So that this room could be submitted to a heating or ventilating engineer with the problem of providing a uniform temperature herein, and by means of fans air circulated herein?

(Deposition of Dr. Samuel B. Smith)

MR. ELY: I object to the question, as entirely immaterial and irrelevant. We are not concerned with the question of heating and ventilating a room in this case.

A What is the question?

(Question read)

A I guess it could."

If this room were converted into an incubator hot water pipes could be provided which would heat the air in the room and the air which was circulated, of course, would be heated if it picked up the heat units from those pipes. I do not agree with the following language of Judge Hickenlooper, in the case of Buckeye vs. Petersime, 19 Fed. 721 (2nd):

"To say that this court room could not be submitted to a heating and ventilating engineer with the problem of providing a uniform temperature throughout the entire cubical contents with given moisture and given oxygen, and that if that problem were solved the heating and ventilating engineer who had solved it by the use of fans, steam coils, vents and intake openings, and the like, would infringe this patent because he had in effect made a mammoth incubator of the court room, is to my mind to take a perfectly illogical position."

It had been long known, and particularly since 1905, that for successful incubation oxygen must be supplied and foul air expelled and also that some means of retaining moisture must be provided. Likewise, it has long been known that some means must be provided for maintaining a uniform temperature in order to successfully incubate eggs in a chamber. Of course, to supply the oxygen to an incubator it would be indispensible that

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fresh air be taken in and foul air discharged. From my own knowledge I cannot say that the hatching of eggs in considerable quantities in the same chamber has long been known, although we have reports of the Chinese and Japanese doing it. I have seen those reports but I cannot give an opinion as to their verity.

I would say that invention resided in the multiple hatching of eggs if you conserved space, expensive buildings, and so on. I disagree with the following statement of Judge Hickenlooper in the case of Buckeye vs. Petersime, 19 Fed. (2d), 721:

"Certainly no element of invention exists in simply doing in multiple that which has been done to a less degree. Wholesale hatching of eggs is not necessarily an element of invention, where by the same identical processes of uniform temperature, moisture and oxygen, eggs have from time immemorial been hatched in lesser numbers".

I would agree with the above statement of Judge Hickenlooper if applied simply to the wholesale hatching of eggs without any advantages. The advantages obtained from my invention are as follows: "Increased percentage in hatching, conservation of space, saving of labor, and lower cost of operation." There may be other advantages which I do not think of just now. Those advantages were known to me when I testified in the case of Buckeye Incubator Company and S. B. Smith vs. D. A. Wolf in 1923; I knew them at that time.

"XQ265 Do you, Doctor, consider that there was any element of invention in the use of a power-driven fan in an incubator?

A The fan alone?

(Deposition of Dr. Samuel B. Smith)

XQ266 Yes.

A With a proper construction of other elements, yes.

XQ267 Can you answer that question without so qualifying your answer: answer it by yes or no?

A With a fan or incubator alone?

XQ268 Yes.

A Well, I would say that would depend on the purpose the fan was put to. Just put a fan on an incubator without any purpose.

XQ269 What is the purpose of a fan on an incubator?

A As they are now used the purpose is to circulate the air.

XQ270 All right, then, do you see any element of invention in applying a power-driven fan to an incubator so as to circulate the air?

A Yes, if you have the other elements you would get a compact machine.

XQ271 Without referring to any other part of the incubator?

A Why, if you want to take a part of an incubator and not take any other part of it it will not be a success.

XQ272 I am not asking you that. (Previous question XQ270 read) Can you now answer that question as stated by the notary?

A Not at this stage of the industry.

XQ273 Do you consider that the patent in suit discloses any invention as to the combination of a fan in an incubator?

A You want my opinion of that?

XQ274 I want your answer to that, yes.

A I will have to look over the patent for that.

(Deposition of Dr. Samuel B. Smith)

XQ275 I will hand you a copy of the patent in suit.

A What is the question? (Notary reads XQ273) It does with the other elements.

XQ276 And without those other elements, Doctor, does it amount to invention?

A The fan and incubator alone, I would say it does not, without the other elements.

XQ277 Do you consider that the circulation of air which is produced by the operation of that power-driven fan in an incubator amounts to an invention?

A It is one of the elements of invention.

XQ278 In itself it does not amount to invention?

A Not that alone.

XQ279 And you never did claim that, did you?

A Not that I know of.

XQ280 So that you weren't the first person to conceive of a fan being used in an incubator and circulating the air throughout the egg chamber?

A As far as I know I was the first one.

XQ281 How, then, do you reconcile your answer with the argument of your attorney, Mr. Bowman, who was counsel for the plaintiffs in the cause of the Buckeye Incubator Company and S. B. Smith vs. D. A. Wolf, in Equity No. 310 in the District Court of the United States, Northern District of Ohio, Western Division, at page 269 and 270 of said record, and which said statement is as follows: 'Now, I want your Honor to keep in mind that we are not claiming the combination of a fan in an incubator. Our patents do not go that far. We never have maintained in this application such claims. They have introduced the file wrapper. We have never thought

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we were the first persons to conceive of a fan being put in an incubator and we do not maintain that it would be patentable invention necessarily to do it, to simply say that because a fan can be used in an incubator chamber that we are entitled to cover all ways of doing it, but our patent is very specific in its drawings, I think.'

MR. ELY: I object to the question as entirely immaterial. It is not necessary at all for the witness to reconcile any statements made by other parties.

MR. TAULBEE: I am showing the witness the part that I have read.

A I simply stated before in my answer—

XQ282 Will you state it again?

A That so far as to my knowledge I was the first to use a fan on an incubator.

XQ283 Then do you agree or not agree with this statement made by your counsel in this case referred to?

MR. ELY: Same statement, not being necessary whether the witness agrees with it or not.

A I don't know whether I agree with all of it or not. I would have to take the time to study the different elements.

XQ284 All right, will you read it? If you don't agree with it then indicate what part you do agree with and what parts you disagree with?

A 'Now, I want your Honor to keep in mind that we are not claiming the combination of a fan in an incubator'—I agree with him there. 'Our patents do not go that far.' I agree with him there. 'We never have maintained in this application such claims'. I also agree with him there. 'We have introduced the file wrapper.' I

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agree with that. 'We have never thought that we were the first persons to conceive of a fan being used in an incubator'. I don't agree with him there for the reason that I don't remember of any instance where I come in contact with a fan used on an incubator prior to 1906. 'And we do not maintain that it would be patentable invention necessarily to do it.' At this date I would agree with him there, but not the date this statement was made. 'To simply say that because a fan can be used in an incubator chamber that we are entitled to cover all ways of doing it, but our patent is very specific, in its drawings, I think.' I would agree with him there.

XQ285 Did you put in 'at this date', Dr. Smith, or did you read that from the book?

A I put that in.

XQ286 Will you re-read that portion of it from the book without interpolating?

A Get me right on that answer.

XQ287 I understand.

A I want it in the record whether you understand or not. 'And we do not maintain that it would be patentable invention necessarily to do it.' Now, at this date this statement was used I would agree with him there, that it would not be patentable invention.

XQ288 Would you read the statement as the book contains it, without adding in any date?

A No, I would not. That would be your answer, not mine.

XQ289 Do you agree with this statement of your counsel: 'We do not maintain it would be patentable

(Deposition of Dr. Samuel B. Smith)

invention necessarily to do it'? Do you agree with that statement?

MR. ELY: I object to this line of cross examination, not being at all necessary. The witness is supposed to testify of his own knowledge and it is not necessary to agree with anybody else.

XQ290 Do you agree with that statement, Doctor?

A Yes, sir."

In the above referred to case two patents were involved, one of which was the patent in suit in the instant case, and the other was a patent covering the mechanical construction of egg trays.

I testified that I added the curtains to my Cleveland machine in 1915, and that is the machine which embodies the invention of the patent in suit.

"XQ297 And by means of those curtains you direct the air from fans upwardly through the oldest eggs to the newer or youngest eggs?

A Yes, sir."

I also increased the number of fans from one to three in 1915.

"XQ300 And so using these curtains in 1915 you abandoned your former method of hatching eggs without such curtains?

A Yes, sir."

I am asked whether I remember testifying as follows in the case of Buckeye Incubator Company and S. B. Smith vs. D. A. Wolf, on page 13 of the record:

"Q What is the advantage of the main patent, No. 1,262,860?

(Deposition of Dr. Samuel B. Smith)

A The advantages are compactness of construction, requiring less space, the elimination of detail in operation as well as construction. You have one thermometer or one regulator on a 10,000 egg machine, where on the old type machine you have 50 regulators and 50 thermometers on that same capacity."

I do not remember testifying to the exact words above, but I would not change that testimony at this time. In the use of my incubator the fans draw air from one portion of a cycle and distribute in another portion of a cycle, and at the intake they take in a little fresh air with each cycle. All of that air is drawn up from out of the egg chamber and into the small chamber above the corridor, except the fresh air. That comes in through the inlet. The air taken from the egg chamber first passes down through the corridor. If the intake and outlet openings are made too large moisture will escape. Anyone skilled in the manufacture of incubators could determine the size to make those openings. The amount of moisture content in the chamber varies with the season of the year, or the condition of the atmosphere. I could not tell you what our incubators will need as to the amount of moisture one month from today without some regulating appliance. The content of moisture in actual practice is determined and regulated by the operator of the incubator. The correct amount is determined by a hygrometer. Early in my experience I depended on the air cell of the egg to determine the moisture. That was not satisfactory, but I cannot say just when I started using hygrometers. In other words, I at first regulated the humidity or moisture by the chicken hatch, or by the air

cells in the eggs. The size of the outlets in my machine helped to conserve moisture, and if the air does not contain enough moisture I would add some to it. In other words, the size of the outlets depends upon the moisture introduced into the chamber. If those openings are large they let more air through and carry more moisture out, which, if done, would necessitate the addition of more moisture. If you couldn't control the moisture you would have to carry it out by air, and if you did control it it would not be necessary to increase the openings so far as moisture is concerned. I would not say that the size of the outlets is determined by experiment, but depends upon the use of the regulator.

The speed of the power-driven fan for successful incubation can be predetermined with the knowledge of incubation at the present day. I had that knowledge when I applied for my patent in suit. I would say that in the successful use of my incubator a definite amount of fresh air is necessary.

A reasonably good hatch of eggs in 1923 was between sixty and sixty-five percent. Nothing under that would then have been a reasonably good hatch. While I had reasonably good hatches from the use of my incubator during the years 1913 and 1914 they would not be considered reasonably good for the year 1923. That incubator attained a uniform temperature in 1913. I remember testifying as follows in the case of Buckeye Incubator Company and S. B. Smith vs. D. A. Wolf, at pages 22 and 23 of the record:

(Deposition of Dr. Samuel B. Smith)

"Q Would you say the same thing about the size of your ventilating openings shown at 28, that that is a matter of experiment?

A Yes. I don't know of any standard scales or any rules of engineering that would tell you.

Q You just cut and tried until you got the right size for each incubator, is that right?

A Yes, sir."

While I do not remember the exact words, if the following excerpt is taken from the record in the previously referred to case, then I testified to it:

"Q Taking the particular fan shown in the embodiment of your invention illustrated in your drawing, at what speed would you rotate those to get the proper draft?

A It would depend upon what make of fan you were using.

Q So that you don't know what speed it would have to be?

A What speed the fan would run?

Q. Yes, sir.

A I know the fan would have to run fast enough to give the air sufficient velocity to maintain an even temperature.

Q What is that velocity?

A I don't know.

Q That is a matter of trial, too, isn't it?

A Yes, sir.

Q You can get your draft too fast, can't you?

A I don't know as to that."

(Deposition of Dr. Samuel B. Smith)

The following testimony likewise occurred in the aforementioned case: "Q Is it essential that you should apply a certain amount of fresh air for each ten eggs or each unit of eggs? A Any definite amount, no." I would qualify that statement to be a reasonably definite amount within certain limits. I do not know at the present time exactly what those limits are.

"XQ351 Was the current of air which you have testified resulted from the use of the lamps in the old hot air incubators capable of moving off foul air and bringing on fresh air?

A Yes, sir."

RE-DIRECT EXAMINATION

BY MR. ELY:

The temperature of the eggs in the Cleveland incubator, which I used during 1913 and 1914, was not uniform. The eggs would heat up in spots and a great many times there would be a lot of fertile eggs would not hatch as well as some of the trays which did not contain so many, on account of the fertile eggs generating so much heat. In 1913 we were troubled with a great number of chicks dying in the shell just before hatching time, and in 1915 that trouble was eliminated. As I remember the test hatch in Attica, Ohio, in 1912, when there was a single tray hatching each week on each side, that is, two trays in the machine, those hatches were good, something like 60 per cent. I was using white leghorn eggs and, of course, they hatch better than others. The test hatch I would say was good with a few eggs in it. That test was made with eggs of two weeks difference as to age. We next filled the machine full of eggs all of the same

(Deposition of Dr. Samuel B. Smith)

age and at the beginning of the third week we had to take them out. They heated up too hot. Aside from the aforementioned test hatch of the first few eggs in 1912 the machine at Attica was always set with eggs of the same age. I have testified that the Lykens, Ohio, hatch resulted in thirteen chicks out of thirteen thousand eggs and that almost complete failure broke me.

I started at Attica in 1909 with experiments which finally led to the perfection of my incubator in 1915. Of course, my experiments really started in the year 1906 at Lykens, Ohio. I made another assignment, due to financial collapse in 1910 as a result of failures in hatches.

Whatever air currents developed in the old style of lamp incubator were due to differences in temperature of air and were known, and are known, as convection currents.

I consider that the invention of my method patent consists in the "**** application of a current of heated air applied to eggs in different stages of incubation, at different levels, in a closed chamber, with openings for the escape of foul air without undue loss of moisture, and this current of heated air must be of sufficient velocity to circulate and diffuse the air throughout the chamber at substantially the same temperature, carrying the units of heat from the eggs in the more advanced stage to those in the less advanced stage, just as claimed in the patent."

I agree with the following words of Judge Woolley, read to me by my counsel, in the case of Buckeye Incubator Company vs. Hillpot, reported in 24 Fed. (2d) 341, at page 342 of that opinion:

(Deposition of Dr. Samuel B. Smith)

"Smith sought to avoid the irregularity of temperature inevitably resulting from an irregular flow of heated air through trays of warm eggs and trays of cool eggs, and so regulate the air by currents that it would strike one body of eggs, whether warm or cool, at one temperature and proceed to another body of eggs at another temperature, and by transferring heat from eggs with an excess of heat to eggs with a deficiency of heat, produce uniformity of temperature in the whole body of moving air."

I also subscribe to the following statement of Judge Woolley in the same aforementioned case:

"Such a uniformity, we think, is made possible only because the air is put in currents or columns and heated with respect to the varying temperatures of the eggs in different stages of incubation, around and about which it passes in predetermined paths. We thought, and still think, this was invention when considered with reference to what the thing achieves, the way the thing is done, and the absence of both in the prior art."

My attention is directed to the affidavit dated February 14, 1918, which appears in the photostatic reproduction of the file wrapper of the patent in suit herein and I am requested to read it into the record:

"Div. 38 Room 378. Appln. No. 127,915 Filed October 26th, 1916. INCUBATORS Samuel B. Smith. State of Pennsylvania, County of Philadelphia, ss:

Samuel B. Smith being duly sworn deposes and says he is the applicant in the above entitled application; that the subject matter of the foregoing amendment was part of his invention, was invented before he filed his original application, above identified, for such invention, was not

known or used before his invention, was not patented or described in a printed publication in any country more than two years before his application, was not patented in a foreign country on an application filed more than twelve months before his application, was not in public use or on sale in this country for more than two years before the date of his application and has not been abandoned.

(Signed) Samuel B. Smith.

Sworn to and subscribed before me this 14th day of February, 1918.

(Signed) Stella Irwin
Notary Public."

The above affidavit is the one I testified about during my cross examination.

(Whereupon counsel for plaintiffs introduced in evidence for the purpose of comparison with a certified copy, the photostatic copy of the file wrapper of the patent in suit, from which a portion was read into the record above, as plaintiffs' Exhibit A-6 and as to which counsel for defendant objected as not being a true copy, not being the proper or best evidence, not being a certified copy, not properly identified or proved and further that it was not shown that the said document comprised all of the file wrapper.

Whereupon, as requested by his counsel, the plaintiff witness read into the record, and over defendant's objection, the oath appended to the said file wrapper as follows:

"OATH. State of Ohio, County of Clark SS: Samuel B. Smith the above named petitioner, being duly

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sworn deposes and says that he is a citizen of the United States of America and resident of Cleveland, Cuyahoga County, Ohio; that he verily believes himself to be the original, first, and sole inventor of the improvement in INCUBATORS described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States.

Samuel B. Smith
Inventor sign here first name in full.

Sworn to and subscribed before me this 20th day of October, 1916. Guy E. M. Floyd, Notary Public."

The statements made in the oath and affidavit above referred to are true.

(Whereupon counsel for defendant moved to strike from the record all of witness' testimony relating to the document marked "Plaintiffs' Exhibit 6" on objections heretofore specified.)

RE-CROSS EXAMINATION

BY MR. TAULBEE:

(A question was put to the witness asking him to state whether or not, during the prosecution of the patent in

(Deposition of Dr. Samuel B. Smith)

suit, he made affidavits claiming only that his method and apparatus had been successfully used during the year 1916 and made no claim of an earlier use. After the question, at witness' request, had been repeated by the Notary, witness further requested that the question be put in written form. Said question was written out by the Notary and certain questions and answers re-read to the witness, after all of which he stated: "I answer that by saying that I do make a claim of an earlier use." The witness further said: "I did not make any affidavit claiming 1916 as the earliest use." The witness did not remember making any other affidavits than the one read into the record for plaintiffs' Exhibit A-6.)

The witness resumed:

I testified on cross examination that I did not get what would be a reasonably good hatch today, during the operation of my Cleveland incubator over the seasons of 1913 and 1914. I do not wish to change that, but I do wish to correct the following testimony given in the case of Buckeye, et al vs. Wolf at page 237 thereof:

"Q I will ask you about your results in operation as to whether you had successful hatches or not.

A I have no figures showing the hatches, but the hatches were reasonably good.

THE COURT: That is 1913 and 1914?

THE WITNESS: Yes, sir.

THE COURT: You considered them reasonably good.

THE WITNESS: Yes."

What was a reasonably good hatch in those years would not be a reasonably good hatch today with the improve-

ments in incubators that we now have. I mean to say that the hatch was reasonably good at that time for that stage.

All the incubators made by my company and, so far as I know, by the Buckeye Incubator Company, under the patent in suit herein, have circulated the air from the power fan down through the central corridor and then, by means of curtains, upwardly first through the eggs in the most advanced stage of incubation to eggs in the less advanced stage.

My attention is directed to the case of Buckeye et al vs. Hillpot, 22 Fed (2d), 855, wherein District Judge Bodine said:

"Step by step through the Patent Office did Smith limit his claims to the passing of the air currents from the eggs in the more advanced stages of incubation to those in less advanced stages of incubation. Day after day he was forced to limit his early broad claims for circulating the air through the eggs arranged in columns to forcing air in a given direction."

I do not agree with the above quoted language of Judge Bodine, and I did not limit my claims to circulating air in a given direction.

RE-DIRECT EXAMINATION

BY MR. ELY:

I remember testifying at page 165 of the record in the said Wolf case as follows:

"I said that in 1913 when we had a tray of good eggs, a full tray of good hatchable eggs, that a great many times we would get a poor hatch from it, and I noticed by using thermometers that those eggs overheated. I

discovered it in 1913 and 1914. It was during the season of 1913, I would not say just what time." Again, on page 166 of the same record: "In 1914 the failure to hatch uniformly was the same as in 1913."

The above quoted testimony is true.

RE-CROSS EXAMINATION

BY MR. TAULBEE:

I am asked whether or not the above quoted testimony from the Wolf case is different from my testimony on cross examination herein when I said that I obtained even or uniform temperatures during 1913 and 1914. My answer to that is that I got even temperatures in the air but not in the eggs.

(Whereupon an adjournment was taken until the following day and the hearing was resumed Saturday, December 20, 1930.)

JOHN G. RULE,

a witness called by plaintiffs, being first duly sworn, testifies as follows:

I am 30 years old, reside in St. Louis, Missouri, and am a consulting engineer. I am a graduate of Massachusetts Institute of Technology. I have purchased a number of fans and installed them for the ventilation of paint shops and boiler rooms.

At the request of counsel for plaintiffs I went to Pacific, Missouri, and examined the Lawry incubator at the plant of the Pacific Refrigerating Company. I made complete measurements of the whole installation and then made up some scale drawings therefrom which I have with me and will produce.

(Deposition of John G. Rule)

I will start with a plan view of the installation on which I will number the heater room No. 1 and the incubator room No. 2. Air was taken in through the wall between those two rooms by a centrifugal fan located in a duct in room 2, and which fan I will mark with the figure 3. The air was sent through the duct marked 4, over a water pan 5, and over a slot or damper, which I will mark 6, and over a sail for the control of the flow marked 7, then around an elbow, shown in the upper left-hand corner of room 2, all of the duct being located at the ceiling. Making that bend the air went along the ceiling from the top to the bottom, as shown on this plan, and at the same time there was a slot the full length of that duct which was the exact height of the chamber between the true and the false ceiling. The duct was 1-5/8" in width. The incubator room was 7'2" high and 17'10" wide. The false ceiling was made in three sections or panels which I removed and then measured the space between the panels and the true ceiling as being 1-5/8" on the inside dimension. I will mark this plan drawing with the letter A and this cross section marked "Elevation of West Walls" with the letter B. The false ceiling is marked with the figure 8 and the permanent ceiling with the figure 9. The panels in the false ceiling were constructed of 5/8" board with studs on the end of them which were apparently 2 x 4s cut in half and nailed on the end with one small stud in the center to form a support. In all there were 297 holes in the false ceiling and 11 in the bottom of the duct. I am referring to a copy of the notes which I made at the time. Those holes in the bottom of the duct are indicated on the drawing A

and the holes in the false ceiling on the drawing B. Drawing C indicates 24 rows of holes across the room from east to west. The first 8 rows out from the ceiling duct had a diameter of 3/4″; the next 8 rows had a diameter of 15/16″, and the last 8 rows had a diameter of 1″, while the holes in the bottom of the duct were 3/4″. The space between the two panels was divided into three channels. There was a false floor and a true floor, just as there was in the ceiling, but with the floor divided into two panels instead of three. Each panel had four studs across its width, one at each end and two in the middle, which of course reduced the area of the space underneath and which said space measured 1-3/4″. There were 247 holes in the floor and 14 in the top of the duct which ran along the east wall on the floor of the room. I will mark that false floor with a figure 10 and the real floor 11. There were 8 rows of holes in the floor with a dimension of 3/4″, 16 rows 15/16″ in diameter and 8 rows 1″ in diameter. The duct I mentioned is shown on the right side of drawing A and I will mark it with the figure 13. It is probably best shown on diagram C and ran across the floor from the South to the North and the inlet from the space between the two floors was continuous along the base of the duct. The inlet was 1-3/4″ wide. On the Drawing entitled "Elevation—North Wall" the inlet duct is marked 14. The outlet duct is marked 13 on the drawing C. The outlet duct delivered to what would be the northeast corner of the incubator room and thence into the heater room.

As the duct entered the heater room there was a box in which there were two outlets, one of which was a gate

into the heater room which swung into the box. The other one was through a metal duct which tapered to 5-1/2" diameter which pipe went through the wall into the outer room. I will mark on drawing A the little box as 15, the gate 16 and the outlet through the pipe 17. There was a metal damper 18 just inside of the north wall of the heater room. There is also a damper in the top of the box which lowers down and shuts off the duct from the incubator room into the heater room and which I have marked 19.

There was a disconnected heater in the heater room which I will mark 20. The fan was 24" in diameter and was of a planer type exhaust fan, usually used for exhausting shavings from wood planers, mounted on a bracket in a rectangular hole on the wall between the heater room and the incubator room. The shaft of the fan went into the next room. I will mark the shaft with the figure 21. Drawing C shows an opening in the wall of the heater room 15-5/8" wide by 22-1/4" high, which I will mark with the figure 22.

Assuming that this fan was operated by a 3/4 horse power motor and assuming that the velocity across the room could be averaged (which it cannot), there would be a flow of about 5′ to 6′ per minute from the ceiling to the floor of the chamber. If the size of a duct which confines air is reduced that materially affects and changes the conditions of flow therethrough. In the Lawry incubator each section of the duct, its change in size, direction and shape, sets up a resistance to the flow of air which I have calculated in arriving at the above conclusion. In proportion to the size of the major duct the space

between the two ceilings set up a large resistance and the slot is a very poor shape to carry air through. I made my above calculations with the egg chamber entirely empty. With the chamber occupied by egg trays the upward convection currents generated by the eggs would oppose the down coming currents; these two would battle each other so that the air coming down would seek the path of least resistance, that is, would tend to avoid the convection currents going up. No down coming currents could possibly get in among the eggs. I have measured the smoke rising upward from a cigarette and it travels between 15′ and 20′ per minute and the speed of the air in the Lawry incubator would therefore be about one third of that.

I have also inspected defendant's Exhibit MM. As I have stated the entire question of air flow is a matter of proportion and this Exhibit proportionately bears no resemblance to the Lawry incubator. The height of the Lawry chamber between the false floor and false ceiling is 86″ with the air space between the two ceilings measuring 1-5/8″, roughly about 1/50th. For the model to be in proportion the air space between the two ceilings should not be 1-1/8″. I have measured the model in two places, at one of which the space is 1″ and another 1-1/8″.

I have measured the distance from the false floor to the false ceiling of the model; in one place it measures 11″, in another 10-7/8″ and in still another corner 11-3/4″. Had the model been made with the same proportions as in the Lawry incubator the space between the two ceilings, I figure, should have been 22/100 of

(Deposition of John G. Rule)

an inch, which would have greatly reduced the flow through the model.

The space between the two floors in the model measured 1"and if in proportion should have been 22/100 of an inch. This difference in proportion gives an entirely different and smaller result.

"Q89 Will you measure the holes in the false ceiling and the false floor in that model and state how that compares, proportionately, with the size of the holes in the Lawry incubator?

MR. TAULBEE: Let the record show the witness had placed in one section of the floor for the ceiling and was measuring that as the ceiling.

Q90 Will you please correct that error, Mr. Rule, and make your measurement on the floor?"

I have measured four of the holes in the false ceiling and false floor of the model at random and find them to be 1/2". They are all of the same diameter in the model, but in the Lawry incubator they vary in diameter. Had the holes been in proportion to the ones in the Lawry incubator they should have been in the model about 1/10th of an inch. The law governing the quantity of air discharged through an orifice varies as the square of the pressure, so the air forced through the properly proportioned hole for this model would be the square of 1/25th of this; in other words, 1/625th of what would go through these holes in the model. The same is true of the holes in the floor.

The ceiling duct in the Lawry incubator extends the full length of the ceiling and the passage where it discharges into the false ceiling measured 1-5/8".

(Deposition of John G. Rule)

"Q98 Now, will you point out the difference between the model and the Lawry incubator in this respect?

A Well, in the model the duct is—I made a mistake back there. This is a 15-inch rule. This condition is worse than I stated. I took it to be a 12-inch rule. I better revise those calculations.

MR. TAULBEE: From what the witness has just stated, that he has been assuming that his calculations have been made from a 12-inch rule while in actual fact he has been using a 15-inch rule, I ask that his entire testimony as to measurements of this model and anything calculated from this rule be stricken from the record as obviously in error."

The only calculations that were in error were those that depended upon the length of the room as measured across the center in the direction of the corner B and the corner C, and those calculations were made with respect to the proportionate size of the holes in the ceiling.

"A I had previously calculated that the diameter of the largest hole in the Lawry incubator was 1/214th of the length of the Lawry incubator. That calculation was correct. Now, the length of this model, across the center, as along the line from the corner B to the corner C, is 29-5/8". To make these holes proportionate in diameter with that length, with the largest holes in the Lawry incubator, rather to the length of the room, they should be 1/214th to 29-5/8"; that would be .138 inches in diameter. As I said before the discharge is proportionate to the area instead of the diameter, and the area is proportional to the square of the diameter. The diameter

(Deposition of John G. Rule)

of a hole 362/1000ths of the diameter of the holes in this model would be the proper equivalent size.

Q102 How would that difference in size affect any flow of air through the false ceiling?

A Well, the discharge through an orifice, the quantity varies as the area instead of the diameter, therefore, as the diameter would be 362/1000ths, I would have to square that to get the proportionate amount through these holes. Now, the square of 364/1000. Now, in addition to that the pressure required to force a given quantity through an orifice varies as the square of the quantity. In other words, to get the pressure required, which is what the fan must work against, you then have to square that quantity. That would be, it is roughly one third, it would be roughly one-ninth."

In the model the entire duct is tapered up and discharged through one hole into the space between the two ceilings. It is a different proportion then in the incubator. In the model the air from the duct is all discharged directly into the space between the two ceilings, while in the Lawry incubator the direction of the air is not towards that space at all but is along the length of the room and the air must turn up to the slot and then turn into the slot to get into that space and all of those corners greatly increase the resistance which the air must overcome. The discharge of air, therefore, in the Lawry incubator would be less than that in the model.

In the Lawry incubator there is a duct that runs the full length of the floor from the north end to the south end while in the model there is no duct at all; there is a slot in the wall that runs from the corner A to the corner

(Deposition of John G. Rule)

D. In the Lawry incubator, due to the studding under the floor, the air must travel from west to east and then turn in a northerly direction into the duct, but in the model the air can simply flow in any direction from the inlet to the outlet and these details as to obstructions have been omitted. Every change in direction, size of duct and every obstruction sets up resistance which must be overcome by the fan and each resistance reduces the total flow. I find that the model reproduces the elements in the Lawry incubator which change the direction of the flow of air. As I have said, the flow of air is entirely a matter of proportion and the introduction of obstructions, turns or changes in sizes of the duct makes this model vary so greatly from the conditions in the Lawry incubator, that I do not think that the two are at all comparable.

The water pan and sail, marked on the drawing A respectively as 5 and 7, set up obstructions to the flow of air. If the damper is pushed up it cuts the flow of air and there were indications in the Lawry incubator that the damper had been adjusted at times. As the damper was lowered the flow of air would be cut.

CROSS EXAMINATION

BY MR. TAULBEE:

"XQ117 If that damper was raised would the flow of air still be good?

A If the damper in no way enters into the duct it would not.

XQ118 And that is true also of the other damper over near the sail, marked 16?

A Yes."

(Deposition of John G. Rule)

I do not know whether in actual operation of the Lawry incubator in hatching thousands of eggs during the years 1915, 1916 and 1917 that damper was ever lowered except for the marks on the wall. I, likewise, do not know whether the water pan and the sail were ever in the positions indicated on my drawings while the Lawry incubator was being operated. In other words, I never saw the incubator operate and the very first time I saw it was a few days ago, so I am merely assuming that those things were in the duct when I say they offered resistance.

As between two given points air will reach its objective on a straight course sooner than it will along a course which makes several turns, but by increasing the power of the fan the two could be equalized, or, in other words, the air would reach its objective in each case simultaneously. You can take any set of conditions and secure a given discharge of air if there is enough available horsepower to do it and the amount will be determined by the obstructions in the course which the air is to follow. My calculations during my direct examination assumed that the Lawry fan operated from a 3/4 horse-power motor, as stated by counsel for plaintiffs herein, the fan in the Lowery incubator is not a standard fan, and I assumed the fan to be efficient proportionately with the best fans that can be bought today. Of course, I do not know whether that horse-power stated by counsel for plaintiffs was actually used throughout the operation of the Lawry incubator; likewise, I do not know the revolutions per minute and I did not figure them. In other words, I did not include in my calculations any consideration of the revolutions per minute made by the fan. If the Lawry

incubator fan was a more efficient fan than could be purchased today, all the fan manufacturers would be missing a good bet. If it were better than a fan of today, you would, of course, get a better discharge of air. I do not know where Mr. Lawry obtained the fan he used. Revolutions vary with the design of the fan and it is the horse-power that is the essential factor. I based my calculations on the best fan I could buy today. In other words, revolutions vary with horse-power and velocity varies with revolutions and with horse-power both. I did not calculate the Lawry fan revolutions.

I did not measure every hole in the false ceiling and false floor of this model and I merely measured some at random. I did not measure the Lawry incubator with the same rule I used here this morning in measuring the model. The one used today is a 15″ rule with 1/8″ graduations. My measurements this morning as to 1/16 of an inch would be wrong by the error which would result from my "splitting an eighth of an inch" in the center with my eye. An engineer uses any kind of a rule and as to the kind of a rule a careful engineer would use to obtain accurate measurements I would say that "there are all kinds of accuracy." If I say the temperature is 78° when the thermometer says 78.01 it is accurate, but to a physicist it would be inaccurate. For measuring purposes I would say the rule I used is perfectly legitimate, because any error I could have made would have been less than 1/5 of one per cent of the size of this model. It is true that while using this rule calibrated to 1/8 of an inch I reduced my calculations to hundredths and thousandths, but I would say, on my reputation as

(Deposition of John G. Rule)

an engineer, that such is within a reasonable degree of accuracy. Anything less than 1/5 of one percent is certainly accurate for the purposes it serves. Nevertheless, I would not say that I would use a rule graduated to 1/8 of an inch in making calculations in hundredths and thousandths. In fact, I would say that the results would not be accurate beyond the hundredths.

"XQ164 Examine this rule you have used. Do you see any curves in its surface from end to end?

A Yes, there is a slight bow.

XQ165 Put it on the desk and see how much space you can see under it—considerable space?

A (witness puts on table) I should say about 1/16th of an inch.

XQ166 Were all of your measurements at Pacific, Missouri, made in this sort of slip-shod manner as you have made the measurements here?

MR. ELY: I object to the form of the question.

A You are using a word in there that I don't think applies to my methods, therefore, I cannot answer the question."

Assuming that the fan makes a certain number of revolutions per minute and that the damper 16 is entirely raised from the duct the velocity of air on the other side of it could be determined. If the damper were lowered so as to half way obstruct the duct a reduced velocity of air before the duct would result and as the area was constricted there would be an increasing velocity over the top of the damper so that the velocity at that point would be greater than it would have been had the damper been moved, but, likewise, the velocity beyond the damper

(Deposition of John G. Rule)

would correspondingly decrease. I would have to go into considerable calculations to determine how far past the duct such decrease would occur. The velocity of the air undoubtedly would be increased for a certain space beyond the damper.

"XQ175 Now, in making these measurements this morning with this 1/8th rule, you don't pretend that those measurements are of any more accurate degree than 8ths accurate?

A Well, I split an eighth of an inch once with my eye to a sixteenth. I could not possibly be off greater than 1/16th.

XQ176 Assuming this rule was straight and not curved?

A The variation in area due to the curve of that rule would probably be about a half of a percent, reasonably so."

In measuring the difference between the permanent ceiling and false ceiling I made my calculations at the corners of the model and did not measure at any other points, but even in a fragile model of this kind I would not say that any considerable difference would result from point to point, or enough difference to affect calculations which went into hundredths and thousandths. Any difference that would result from the distortion of this rule would be "so negligible it is ridiculous to even try to discuss it from an engineering view point," but I have not worked out my calculations from all points of the model to say whether I am right when I remarked that it would be ridiculously small. My attention is directed to a corner of the model where I see it is sprung out a fraction of

(Deposition of John G. Rule)

an inch. Likewise, the entrance of the air duct into the space between the two ceilings has been sprung a little. I measured it with the rule that I used this morning and would say it is between 1/4 and 1/8, or about 3/32, although my rule is not graduated to 32nds. I will also measure it with a rule, which counsel for plaintiffs has handed me, calibrated in 64ths and I find it to measure 6/64ths. I am told that this model has been shipped by railway express from St. Louis to Cleveland and it is, of course, possible to damage anything in shipping, but as to whether or not a model of this fragility would necessarily be distorted at the end of such a journey I will not attempt to say, because "I don't attempt to qualify as a freight expert." The question has been repeated to me and I would say that no reasonable inaccuracy could result as to results which could be obtained with this model, although I have not seen the model operate. I have measured the distance between the end of the partition dividing the chamber and the front wall and I find that it has been sprung out of line exactly 1/4 of an inch, and my measurements this morning were made with it in that condition.

I testified about convection currents arising through the egg chamber at Pacific, Missouri, but I have never measured such currents and I did not see any eggs in that chamber, nor did I assume that eggs were therein when I answered the question for counsel for plaintiffs. Convection currents follow certain laws, but I could not determine exactly the convection currents rising through that chamber. I do not know how much convection current rises from one egg and if I had to I don't even know

(Deposition of John G. Rule)

whether I could measure it. I have seen an incubator in operation but I don't know what its capacity was. I have never had any experience in the incubator art. I do not know in what position the eggs were actually placed in the incubator at Pacific, Missouri. Nevertheless, my testimony was not inaccurate when I said that air circulating downwardly through the chamber of the Lawry incubator could not possibly impinge upon the eggs. Assuming that there were layers of eggs in that chamber, and, regardless of their exact location, it would be a great deal easier for the air to follow passages in traveling toward the floor than to force its way through the trays against the resistance of the eggs therein and whatever convections existed. When assuming that there were trays of eggs in the incubator I do not know what kind of trays I had in mind. In fact, you could make the trays so a great part of the resistance would be from the eggs alone, and you could likewise make them so that no air could get through at all. In fact, I don't know anything about the placing of the eggs, the racks, tiers or of anything else.

It is the quantity of air that counts. If 2,000 cubic feet of air per minute is propelled through a small space the velocity is greater than if that air is propelled through a larger space, but if forced through a succession of small spaces and then dumped into a large space the velocity in the big space is less than if previously forced through large spaces and then dropped into the same space. There is an increase in velocity but there is a decrease in quantity that can be put through with a given horse-power and the thing that determines the velocity

of air in the room is the quantity of air that goes through it and not the velocity measured at any point before entering the room. Any horse-power could move the Lawry fan at Pacific, Missouri, at a rate of 500 revolutions per minute if the resistance were removed. It is not the revolutions that count, it is the horse power that produces the quantity. In other words, it is the quantity of air and not the velocity which makes the determining factor. Of course, if the revolutions per minute were increased the velocity likewise would be increased, but to do that you would require more power.

I did not measure all of the 247 holes in the Lawry incubator but only measured some at random. I found they varied in size. I did not measure all of the holes in the ceiling nor in the duct, but the ones I did measure did not vary in size. In measuring between the permanent floor and false floor I took a half dozen points at random, and did the same thing between the permanent and the false ceilings. The measurements in the ceiling varied from 1-3/4" to 1-5/8". I found no point where there was over 1-5/8", but I would not say that none exists.

I know nothing about the model here not being introduced as an exact replica of the Lawry incubator, or not being scaled to size.

In saying that the main chamber of the incubator at Pacific, Missouri, was divided in three channels, I meant to say the space between the two ceilings.

By using the finely graduated rule, handed me a few minutes ago by counsel for plaintiffs, I can measure things as accurately as thirty-seconds and sixty-fourths. I can

(Deposition of John G. Rule)

do the same thing with the rule I used this morning within all reasonable limits, but, of course, there would be some infinitesimal differences. It is true that there is a difference of 1/4" between the partition and the outside wall of this model but that point has absolutely nothing to do with the incubator.

"XQ246 It has something to do with your measurements?

A It is exactly a quarter of an inch in there, yes."

Referring again to my testimony about smoke rising from a cigarette, I placed a few of them on the floor, took out my watch and roughly tried to calculate the smoke rising from those cigarettes. I said very roughly that it was between 15' and 20', but there was no accuracy in that and such a test entails a great many elements.

RE-DIRECT EXAMINATION

BY MR. ELY:

Counsel for plaintiffs hands me a 6" steel rule, made by the Bates Manufacturing Company, Lawrence, Mass., which is calibrated to 64ths and I am asked to take this rule and to make a comparison between the measurements as I gave them this morning with the other rule and to state any differences which occur and which would affect my calculations.

(Whereupon counsel for defendant objected to further measurements being made as not proper re-direct examination, as unnecessarily burdening the record after counsel for plaintiffs had concluded the direct examination of witness and after witness had made each detailed measurement which he was requested to make.)

(Deposition of John G. Rule)

I am asked, by means of this steel rule, to measure the openings and the space between the false and true ceilings and between the false ceiling and the floor, and also the ducts, and to state whether any error arose through the use of the rule which I used this morning. I will start with the measurements between the two floors. At corner A, as nearly as I can determine, it is one inch. I would say in corner B it is 1-1/64" and the same in corner C, while in corner D it is exactly 1". The size of the holes in the floor is exactly 32/64ths. Looking at it again I would say it is half way between 31/64ths and 32/64th.

(Whereupon counsel for defendant stated that his last preceding objection goes to all further measuring and calculating with the use of the new rule.)

The first two holes in the ceiling measure 32/64ths, another about 32½/64ths and "the fourth one is ½ a 64th, under, 31½/64th." As to the space between the false and true ceilings at corner A it measures 1-9/64ths". In corner B it is 1-1/64", in corner C it is exactly 1", while in corner D it is 1-9/64". I, therefore, find a few variations of a 64th of an inch over the measurements made by me this morning, but the difference in my calculations would be negligible.

"RDQ263 When you arrived at your proportional results you gave certain figures for holes and spaces.

A Well, let's see. We took a half inch hole. Assuming that we should have taken it—which I don't think is correct—but assuming we should have taken a half plus 1/64th of an inch, we cut down—we found out, proportionately, the diameter of this hole should be a third, wasn't it—I believe it was—which would make a differ-

(Deposition of John G. Rule)

ence—let me look that up to be sure—about a third; it would make a difference of 1/192d in the diameter of the hole; as far as quantity results are concerned. That is negligible."

During my cross examination I calculated air speeds of fans on the basis of the efficiency today, and I did not consider the efficiency of fans during 1916 and 1917. Fan manufacturers are constantly working on curves and blades of their fans and all other factors that increase their efficiency.

RE-CROSS EXAMINATION

BY MR. TAULBEE:

In making these measurements between the permanent and false floors in the model the end of my rule rested on the base of the permanent floor of this model and the top measurements were taken against the top of the wall on which rests the board that represents the real ceiling. Therefore, that measurement wasn't made between the permanent floor and the false floor and the same is true of the permanent and false ceiling.

As requested by counsel for defendant I have measured or tested the first eighth of the inch on the one inch side of the rule which I used this morning with the accurate steel rule given me by counsel for defendant, and I find that the former rule which I used, in making my first measurements and calculations, is 2/64th of an inch off. In other words there is an inaccuracy in the rule that I used of 2/64th occuring in the first eighth of the first inch thereof.

(Deposition of John G. Rule)

"RXQ279 And that was the end of the rule that you used in making all these measurements, wasn't it; you began to make your measurements from that end?

A Some of them; some I didn't.

RXQ280 You did considerable of them?

A I did quite a little."

RE-DIRECT EXAMINATION

BY MR. ELY:

As I have said, the holes which I measured in the Lawry incubator, and which I selected at random, were the same in diameter, and, in my judgment, all of the others were bored with the same drill. In other words, as measured by the eye they appeared to be the same. Referring again to the 15" rule, from which I made my measurements this morning, any measurements made by it would show 6" when it really should be 6-2/64". In other words, the true distance would be 2/64" greater than that measured from that end of the rule and on the other end of the rule it would be 2/64" smaller. Of course, in making some of the measurements this morning I had to replace the rule several times, as it is only a 15" rule, and in doing so I would make a mark at the end of the first measurement with a pencil. There is a variation in doing that but any error would be inclined to be negligible over a dozen measurements. One would make it a little shorter one time and a little longer the next. There would be some variation, depending upon the skill of the person using the rule.

(Whereupon counsel for plaintiffs' offered in evidence as plaintiffs' Exhibit A-7, A-7-A, A-7-B, and A-7-C, the

(Deposition of Joseph I. Taggart)

drawings referred to by the last preceding witness during his examination and as to which counsel for defendant objected upon the grounds that said drawings were immaterial, incompetent, and irrelevant, inaccurate and not properly connected up nor properly identified and the conditions being unknown under which the said drawings were made, or by whom, or the place where made and likewise indefinite as to the calculations or data upon which said drawings were based.

JOSEPH I. TAGGART,

a witness being called by plaintiffs, being first duly sworn testifies as follows:

DIRECT EXAMINATION

BY MR. ELY:

I am 43 years old, live at Cleveland, Ohio, and am the same Joseph I. Taggart who testified in this case before the Master. I have been at the plant of the Pacific Refrigerating Company at Pacific, Missouri, three or four times, starting in 1925, again in 1926 or 1927 and the last time the early part of the present month. My purpose in going there was to make a study of the operations of Rolla Lawry, as the question of his use of incubators in 1916 and 1917 had been brought to our attention in court work and I wanted to look into it and see what there was to it. In certain patent litigation we had had the Rolla Lawry use had been cited as having some bearing upon the Smith patent. That use was set up in the cases of Buckeye Incubator Company vs. Archie E. Stone at Corvallis, Oregon, and Buckeye Incubator Company

vs. Hillpot, in Frenchtown, N. J. I had nothing at all to do with the Bolling case.

While at Pacific, Missouri, I examined an incubator that had been built under the direction of Rolla Lawry. During my first visit I made accurate measurements and drawings. I have checked with Mr. Rule on these measurements, am familiar with all of the drawings introduced in evidence as plaintiffs' Exhibit A-7, and those drawings correspond with the measurements I made, and correctly show the installation at Pacific, Missouri, as I saw it.

Mr. Lawry used a 24" slow shaving fan, or one of that type. The blades of rotary fans differ, and this particular fan is classed as a slow shaving fan. It is built to remove shavings from planing mills. This fan is the slow shaving type. The first time I saw that fan was in the housing that had been built for it in the north end of the incubator room and near the ceiling. It remained there until the last trip I made to Pacific when a portion of the housing had been removed and the fan had been changed on its axis so as to churn the air in the room instead of act as a blower. So far as I could tell it was the same fan I had seen during all of my visits to Pacific. Mr. Rule's drawings correctly represent the fan in its position inside of the incubator room.

A conduit extended from the discharge of the fan to near the west wall, thence south along the junction of the ceiling and the west wall to the extreme south wall. The location and design of this conduit was correctly shown on Mr. Rule's drawing and the dimensions are correct.

The conduit discharged into a space between the false and permanent ceiling of the chamber, which space meas-

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ured approximately 1-5/8". The conduit was approximately 17' long and the discharge opening of which was the same width as the space between the two ceilings. I observed near the fan a water pan resting in the conduit, which was approximately 2" high.

"MR. TAULBEE: Are you reading from the drawings or relying on your recollection?

THE WITNESS: I am testifying.

MR. TAULBEE: Let the record show that the witness is looking at the drawings or exhibits in this case.

Q34 Mr. Taggart, will you testify from your recollection and then compare your recollection with the drawing?"

There was a moisture pan two inches high and the width of the conduit near the fan, and also a metal sail approximately five feet from the fan. There was also a sliding damper the width of the conduit which could be adjusted up and down into it. Mr. Rule's drawings correctly show the conduit construction.

The ceiling proper was a regular tongue and groove type. Below it was the air space of approximately 1-5/8" and below that was a false ceiling, also of the tongue and groove type, and which was approximately 3/4" thick. The false ceiling was supported from the main ceiling by means of buttons so that the former could be removed at will, and I actually did remove two panels that were approximately 6' long and 4' wide. I measured the space between the two ceilings on each of my two trips to Pacific. I first made my measurements by pushing a rule through the holes in the false ceiling and later by removing a panel and checking my observations. There were

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24 rows of holes in the false ceiling of which the eight rows nearest the west wall were the smaller, being approximately 3/4". The next eight rows were larger and were between 7/8 and 15/16ths of an inch and the last 16 rows were 1" in diameter. There were approximately 10 or 12 holes on the lower side of the conduit, each of which was 3/4" in diameter.

There was a permanent and false floor in the incubator with an air space between approximately 1-3/4" to 1-7/8" and with holes through the false floor that corresponded with the ones in the false ceiling with the exception that they outnumbered the holes in the ceiling by one third. I removed one of the false floor sections and located a discharge conduit which was located at the junction of the floor in the east wall in the opposite position from the intake conduit. The horizontal measurements of this discharge conduit correspond to the incoming conduit but differed slightly in the vertical measurements. That conduit discharged into a room immediately to the north of the north end of the conduit in which room, during my first two or three trips, I saw a heater and water heating pipes, the latter of which were located on the side of the wall. That room was approximately 8' long and 4' wide. There was a door or damper located in the discharge conduit so that the air could be discharged into the heater room, or the damper could be swung in another position so as to discharge the air entirely out of the building. The fan was located, as I have said, on the north wall of the incubator just through the wall from the heater room and was so arranged that when operating it would pull air from the heater room and force it

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through the conduit. I find that Mr. Rule's drawings are correct illustrations of what I observed as to the Lawry incubator.

The Lawry fan is of a type which is supposed to throw from 800 to 1600 cubic feet of air per minute, depending upon the horse-power of the motor that energizes it and also in the amount of resistance placed in the path of its flow. In other words, with the Lawry fan properly hooked up it could be expected to throw freely from 1500 to 1600 cubic feet per minute. With the restrictions that were placed in the path of its air current the flow would be greatly reduced and no matter how much power was used I do not believe it would be possible for that fan, under those conditions, to move more than 1200 to 1300 cubic feet per minute, if it was possible for it to do that. The volume of air in the Lawry egg chamber, which was 1700 cubic feet as to contents, could be moved in approximately one and a half minutes by such a fan, which would mean an average velocity of air from the ceiling to the floor something less than 5′ per minute. With the fan operating at maximum there would be a discharge from each of the holes in the ceiling that would be noticeable a short distance thereform, but in the middle portion of the room there would not be enough air current to turn a sensitive anemometer. I am considering the chamber as being empty. During my visits to the Lawry incubator I observed perhaps 100 egg trays. The construction of the egg trays and the racks in which they were placed in the Lawry incubator would mean that slightly more than one half of the space would be taken up by corridors. That was necessary in order to pull the trays from the

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stacks to perform the various operations about an incubator. That means that almost the entire downward air movement would be through the corridor and the heat generated from the hatching eggs would cause an upward convection current through the columns of eggs in the last stages of incubation. Directly against the ceiling or on the topmost trays of eggs, there might be a slight downward movement of air directly under some of the holes in the ceiling, but there would be no chance for a general downward movement through the remainder of the column.

I met Mr. Rolla Lawry some three or four years ago and discussed this incubator with him. I am handed an affidavit which Mr. Lawry made with respect to his incubator and which was executed in my presence in 1925 on December the 15th. After its execution Mr. Lawry gave me the affidavit.

(Whereupon, and over the objection of counsel for defendant, upon the grounds of improper and incomplete identification, no foundation for it, immaterial and irrelevant, etc. counsel for plaintiffs offered in evidence, as plaintiffs' Exhibit A-8, the above referred to Lawry affidavit.)

(Over the objection of counsel for defendant the witness resumed:)

I discussed with Mr. Lawry his ideas and theories of incubation and he advised me that he built this Pacific incubator in connection with Madison Cooper, whom he considered an expert on refrigeration, and that they had reversed refrigeration principles in the construction of the Lawry incubator. In utilizing refrigerating principles

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at that time it was the custom to bring the cold air in at the bottom and pull it out at the top of the room, but they reversed that by pushing warm air down through the bottom and drawing the air off at the bottom of the room. Mr. Lawry assured me that he had built the machine on what they considered at that time the most scientific and novel principles of ventilating a room. He had, or he gave me, no thought that the operation of this fan was for any purpose other than for ventilation. Mr. Lawry did not want strong drafts but he wanted efficient and complete ventilation.

I examined the model, defendant's Exhibit MM, this morning. The space in the model between the two ceilings is considerably out of proportion and the same is true of the space between the two floors. Likewise, the size and number of holes in both the false ceiling and false floor do not correspond to the actual incubator and the restrictions in the air flow are not properly represented in the model.

(Whereupon counsel for defendant entered objections as to a continuance of any such testimony and stated that it had never been contended by defendant that the model was an exact replica and exactly in proportion to the Lawry incubator.)

Likewise, the fan and conduit used in the Lawry incubator are not correctly represented in the model. The space between the two ceilings are approximately 1", while it should be 1/5". The same is true of the space between the floors, which is approximately five times the space that it should be if proportioned properly. The arrangement of the model whereby the air is conducted

from beneath the floor into the heating chamber does not correspond with the real incubator and, furthermore, there are no dampers shown to restrict the flow of the air. The flow of air in any room arrangement varies greatly with the size of the passages and the restrictions that are placed in the flow. The model having spaces between the ceilings and floors about five times what they should be means that the air flow therein would be ever so much faster. The amount of friction in small spaces is very great compared with large spaces.

I heard the testimony of all the witnesses whose depositions were taken at St. Louis recently in this case except that of Mr. Hickey. I did not hear all of his testimony. At that time I saw the Fullington incubator which was introduced in evidence and particularly the device which was referred to as Exhibit DD. The Fullington incubator consisted of a motor and fan, with an air tube or duct leading from the fan to a point approximately 20″ therefrom with a baffle plate under the air duct and alongside of the baffle plate was a return duct which carried the air back to a point where it was again discharged into the room in which the device was operating, not into the incubator but to the outside atmosphere. The fan was constructed by using the end of a tin can as a housing. It was a four bladed fan that was to operate on the blower type or principle. The above described device, Exhibit DD, was inserted into the end of the incubator so that the baffle plate and the air ducts were in a position directly above the column or tray of eggs. The motor was intended to be connected with batteries and with a thermostat which would start blowing air from the outside

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into the incubator when it would overheat and, of course, a like amount of air would be discharged directly back to the atmosphere. The purpose was to pull fresh air from the outside into the incubator to act as a cooling means when it became too warm and it was not intended that the fan should run when the incubator was at the right temperature but it was supposed to run intermittently in order to cool the air if it became too warm. This is not comparable to the Smith practice. In the Smith invention the fans are arranged inside the incubator and run constantly and circulate air freely through all parts of the machine at all times. The air churned by the fan is not discharged to the outside but into the room again so that the proper humidity can be maintained. "The Smith principle also uses the heat of the eggs in the advanced stages of incubation to help incubate those in the earlier stages of incubation." The fans move with sufficient velocity to maintain a uniform temperature at all times. If you were to force into the Smith machine an amount of air corresponding to the amount in the Fullington device and keep it going in all of the time you would not be able to hatch eggs because a blast of air of that kind would not permit of a uniform temperature throughout the machine, and also because the eggs would be dried down to a point where good chicks could not be hatched from them. "The Smith invention, then, calls for a continuous movement of air of sufficient velocity to carry the heat away from the eggs in the advanced stages of incubation and use that heat to help incubate those in the earlier stages of incubation."

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(Over the objection of counsel for defendant the witness continued.)

One of the witnesses at St. Louis testified that the Fullington fan would run about two minutes every hour, another testified that it would run only a few seconds at a time. Had the Fullington fan operated continuously it would have been impossible to maintain a uniform temperature throughout the incubator and such would also have dried the air and carried out the moisture to such an extent that good chicks could not have been hatched.

"Q97 Did, then, the Fullington incubator embody the method of operation of the Smith patent?

Mr. Taulbee: I object to that as calling for a conclusion.

A No, sir, it did not.

Q98 For the reasons you have given, is that correct?

A Yes, sir."

There are four or five important principles to incubation. The most important principle is temperature and the next most important is moisture. It would be impossible to hold either the moisture or temperature right. It would require a great deal of preparation, which is not shown in the Fullington device, to hold the moisture and it would be impractical and therefore impossible to hatch good chicks. In the Fullington operation all eggs were set at one time, while in the Smith invention staged incubation is employed. There was no arrangement in the Fullington device for recirculation of the air; the air was all drawn from the outside atmosphere and discharged to the outside. This is opposed to the Smith machine in which the air is in constant recirculation and which

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is absolutely necessary to hold uniform temperature and proper moisture.

CROSS EXAMINATION

BY MR. TAULBEE:

From 98 to 99 percent of the air is recirculated in the Smith machine and the remainder discharged to the outside atmosphere.

XQ105 If a Smith machine were placed in a closed room would you say that none of this discharged air was ever again taken into that machine and recirculated?

A The Smith machine will not operate efficiently in a closed room.

XQ106 Please answer the question first of all and then go into these matters if you think it is necessary to explain.

MR. ELY: Mr. Taggart you may answer the question as you see fit.

A How long was the machine in operation, and what is the size of the room?

XQ107 Well, we will say that the room is of the usual proportions; I don't know what they are; let's say 9x12; the machine is in the process of incubating eggs, and the period of incubation is 21 days, isn't it?

A They would not hatch.

XQ108 I did not ask you that. Answer the question, if you can.

A The particular unit of air as discharged would not as that unit, be brought back into the incubator and recirculated as any sort of unit; anybody knows it would in course of time.

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XQ109 Isn't that what happens in the Fullington device if placed in the same room?

A No, sir.

XQ110 What would happen?

A A room always has some discharge to the outside atmosphere.

XQ111 It always has?

A Any room that is used for an incubating room always has, and the average room has an exchange with the outside air at least two times an hour.

XQ112 Then you want to say that none of the air which is discharged from the Fullington machine is ever recirculated in there if such machine is in a room such as we have spoken of as containing the Smith machine?

A Not as a unit, no, sir.

XQ113 I didn't ask you as a unit. I said isn't all the air recirculated? Now answer that question, please.

A The air as a unit is not. There might be some molecule of the air get back in there.

XQ114 Some part of the air?

A Some molecule.

XQ115 Some part of the air would get back into that machine, isn't that a fact, and isn't it perfectly obvious, and isn't it perfectly simple?

A It is reasonable to suppose it would, yes, sir.

XQ116 You bet it is. And in that respect I don't mean as to degree, but in that respect and involving that principle of recirculation of the same air, what difference do you see in the Smith machine and in the Fullington machine?

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A Well, in the first place, in the Fullington machine you wouldn't be able to maintain the temperature uniform.

XQ117 I don't ask you that. I ask that answer be stricken.

A And for the next reason—

XQ118 The witness is equivocating and hedging about, not answering the question.

MR. ELY: I object to that statement and ask the question be read and the witness given an opportunity to answer.

(XQ116 read by notary)

A In the Smith machine the recirculation is such that you keep a uniform temperature and keep from losing your moisture. In the Fullington machine both of these would be impossible.

XQ119 Will you answer the question?

A I did answer it. Please read it again and see if I didn't.

XQ120 I don't want the question read. I heard you. In other words, isn't it a fact that some of the air discharged from both the Fullington and the Smith machine in closed rooms would be recirculated?

A It is possible.

XQ121 And they are the same in that respect?

A In that respect, yes, sir; but that has nothing to do with recirculation within the machine.

MR. TAULBEE: I object to that as being self-serving, not being responsive, and I ask it be stricken from the record."

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I heard various witnesses testify at St. Louis that the Fullington machine successfully incubated eggs. I never actually saw that machine in operation and I never attempted to operate it.

"XQ125 So that all of your testimony in court about that machine has been merely theoretical, is that not right?

A It is based on my experience as an incubator man, yes, sir.

XQ126 Been merely theoretical, is that right?

A No, sir, based on my experience.

XQ127 Would you call it actual use of the machine?

A It is based on my opinion as a man who has studied such a machine.

XQ128 What is your understanding of theory?

A I don't understand that question.

XQ129 Do you refuse to answer the question or you cannot?

A The dictionary is the best answer for that.

XQ130 Will you please repeat the question? (addressing notary, who reads question) Do you still refuse to answer the question?

MR. ELY: I object to the question as having nothing whatever to do with the case. We are not interested in definition or theory.

XQ131 Do you still refuse to answer the question?

A That is, to my understanding of theory?

XQ132 Yes, that is all I want.

A Or the theory of incubation? I can answer on the theory of incubation, if that is what you mean.

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XQ133 No, I want you to tell me what you understand by theory. I asked you a question based on, including that word, and I want to know whether you understand the word well enough to answer the question.

MR. ELY: I object to the question as immaterial.

XQ134 Let me ask you this: isn't it a fact that all your testimony today in regard to the Fullington machine is based on theory rather than actual use or experience with that machine?

A I have not had any use or experience with that particular machine. I have used other machines. I have worked with other machines.

XQ135 Yes, I understand that.

A And I am basing my statements on the results of actual experiences with other types of incubators.

XQ136 And isn't the result of actual experiences worth a lot more than theorizing?

A I think it is, yes, sir."

Conditions would cause a variation in the periods over which the fan would operate in the Fullington incubator and likewise the intervals between operations would also vary. The temperature of the room and of the incubator is the principle factor and humidity has nothing at all to do with it.

"XQ144 What point was it set for in the operation and use of the Fullington machine?

A I don't know the exact temperature.

XQ145 How, then, do you know it is too high?

A Because of the way it is operated, because it was testified to that extent.

XQ146 Who testified to that extent?

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A The testimony was given to the extent that when the incubator became too warm they would start the motor and cool it down again.

XQ147 Do you want to go on record as saying that there was testimony when the incubator became too hot the thermometer was set at that point?

A That was the impression that was given, at least. Your record is the best testimony on that.

XQ148 Well, then, all of your testimony is based on the assumption that this thermostat never did start the motor and fan until the incubator was too hot and overheated?

A It was too hot for practical incubation. That was the purpose of it.

XQ149 Don't you know for a fact that the thermostat arrangement was operated to start the fan and the motor and so cool down the temperature before the temperature got too hot or overheated the air?

A No, sir.

XQ150 Doesn't that appear a perfectly obvious and a sensible thing to do?

A That depends on what you mean by 'too hot' and 'overheated'.

XQ151 Well, I am employing your words.

A If it becomes too warm for proper incubation the fan was to start. It had no purpose unless it did become too warm.

XQ152 That is nothing but a mechanical process to set that at any point you want to?

A That probably could be adjusted, yes, sir.

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XQ153 And that is about all there is to temperature and moisture, isn't it?

A No, sir."

In my opinion temperature and moisture are the most important principles of incubation. I disagree with Judge Hickenlooper on two or three points when he said, in the case of Buckeye vs. Petersime, (opinion unreported), affirmed in 19 Fed. (2d), 721:

"If we must supply uniform heat, if we must supply necessary oxygen and humidity, and if that in effect is all that is necessary to incubation, incubation pertains solely to the art of heating and ventilating. There is no independent art in incubation which cannot be found in heating and ventilating, and, as Dr. Wagner said upon the witness stand in the trial of this case, substantially, the heating and ventilating engineer can today provide a uniform temperature with any desired degree of humidity or oxygen for any given or building, that is all that it is necessary to do to construct the perfect incubator."

In the first place Judge Hickenlooper did not take into consideration the animal heat that is generated by eggs in the various stages of incubation. He had little conception of the problems that were necessary to solve that problem. It is my opinion that the Judge had such little conception of the case that I never felt that he decided it correctly. I have re-read the above quoted portion of the opinion but without reading the entire case I cannot state any more reasons for differing from Judge Hickenlooper.

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Even with the proper humidity, 99-¼° is too hot for a Smith incubator. I am familiar with the Smith patent, No. 1,262,860 in suit. A part of the specification to the Smith patent, beginning on page 2, at line 73 and ending at line 78, is as follows:

"It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature through the chamber between the limits of 100 degrees and 105 degrees."

That temperature will apply to the eggs in the different stages of incubation.

I have stated that it would be impossible to hatch healthy chicks in the Fullington incubator with the motor and fan running continuously. To obtain good hatches it is necessary to maintain a certain uniformity of temperature and proper moisture. With the Fullington fan operating continuously and blowing air from the room into the chamber it would be impossible to obtain a uniform temperature at all points throughout the chamber, and, furthermore, the air would be changed so often that the eggs would be dried to a point where you could not get good chicks out of it. The temperature of the room would vary a number of degrees below that of incubating temperature and when injected into the machine would be bound to make cool spots in the machine. There is no other possibility for it. If the temperature of the room was raised so that it approximated incubating temperature then the machine would become too hot because you do not have a circulation of cooler air. It would dry the eggs out. Incubators of the Fullington type operate

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on the convection principle and have at the top a temperature of perhaps 106 to 107 degrees and at the bottom of the machine a temperature of 97 to 98 degrees. The temperature should even be lower if the machine is operated in a cold room. With the temperature of the room approximating that for good incubation there would result below the eggs a temperature of 100 degrees and if there was any heat in the heating elements the temperature at the top of the eggs would be a good bit over 110 degrees. Of course, I am discussing the Fullington type incubator without the Fullington attachment. With it attached to the incubator, and by blowing 100° air throughout the chamber it would be impossible for the temperature therein to go below 100 degrees at any time. It would further depend on the heating element and the stage of incubation as to the exact temperature which would be maintained. The device would have to be in constant operation and that would dry the eggs down very decidedly, but would possibly keep the inside temperature just below 100 degrees at any stage. I would say the temperature through the machine would be too hot for good chicks. With such an arrangement the temperature of the machine might not rise over the temperature of the room during the first week. During the second and third weeks the temperature in the machine would exceed that in the room by perhaps two degrees. With a room temperature of 98 degrees, and assuming that 100 degrees is the right temperature for successful incubation, the Fullington incubator would not rise perhaps to over 100 degrees with the Fullington device in constant operation, but that would dry the eggs out to a point where they would not

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hatch because of the circulation throughout the machine of air from the room. Of course, if moisture is provided in the room then that is a different proposition. There was no provision for moisture in the Fullington incubator when I saw it at St. Louis, but Mr. Fullington testified, as I remember, that he used a saucer as a moisture means. All incubators of that type have provisions for moisture but they would not be sufficient if a current of air was forced throughout the machine. I have testified in those various cases involving the patent in suit. The problem of providing sufficient moisture in an incubator is not a mechanical problem. There are only two or three known methods whereby moisture may be added to the air in sufficient quantities for hatching in forced draft machines. Those methods are not so well known. One of them consists in atomizing water by means of air pressure.

There was a means in the Fullington machine which might be termed a return duct, as I called it in my preceding testimony. It came from the interior of the machine and discharged into the outside atmosphere. By the word "duct" I do not necessarily mean a closed channel. The duct or channel in the Fullington machine was closed where it protruded therefrom but inside of the machine where there was the baffle plate the edge of that duct was open and so was the top and there were perforations in the bottom thereof in the middle of the chamber and directly over the eggs. In speaking of this duct I think it was more than a mere outlet valve, because of the fact that the closed portion extended perhaps two or three inches into the chamber. I do not remember exactly, although I did make some measurements of the

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Fullington incubator. I did not mean to say that the same air which was taken in by the Fullington fan and circulated through the chamber was immediately blown right out again. A corresponding amount of air would be blown out but before that happened the incoming or new air would be mixed with the air already in the machine and it certainly would be diffused down through the chamber.

The fans in the Smith incubator circulate air continuously and I would say that a uniform temperature could not be maintained through the egg chamber of the Smith incubator by the intermittent operation of those fans. The continuous operation of fans might be termed a mere mechanical detail but there are a number of other problems.

I, of course, never saw the Lawry incubator at Pacific operate and I never saw eggs stacked in the egg chamber thereof as they were while that machine was operated. I do not know the definite arrangement but I have seen some of the egg trays and the pictures of them containing eggs. I have none of those pictures now. My conclusions as to the circulation of air throughout the Lawry incubator chamber have been based upon the cabinet as I observed it and upon the effect that the introduction of columns of eggs would have in a closed chamber of that kind. I am asked what my conclusions would have been as to the circulation of air throughout the Lawry egg chamber and through columns of eggs stacked therein if, after one of its operating periods I had visited it, and found tiers of eggs throughout the chamber with one tray superimposed over another, and if I had raised a section

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of the false floor and had seen there chicken down, or small feathers, although a search at other points, and notably the ceiling and walls did not reveal any such down or feathers. If that happened "I would say that the air current that was through there was so small, was so slight, that it was almost less than the convection currents, because convection currents will carry down under any ordinary operating conditions." If the air settled downwardly feathers and down would also settle. Assuming that there is a current of air circulating the mere fact of finding down and feathers below the false floor would not necessarily mean that the circulation of air was downwardly. The down might be heavy enough and settle there even against convection currents. I have never measured convection currents and it would be impossible to estimate the convection currents rising from one egg. Assuming that the down in the Lawry incubator had necessarily to go through 3/4" holes and that it had to be cleaned out occasionally, even then it would not necessarily indicate that there had been downward currents of air throughout the chamber and in and about the trays of eggs. Down collects on the floor of any type of incubator. If I see it no other place than below the false floor even then I would not say that there had been a downward current of air but that somebody had put the down where it was. Most certainly a downwardly passing current of air around the eggs and throughout the chamber would actually carry chick down through the holes and false floor of the Lawry incubator but if it was found there and no other place, that would create an unnatural situation because down is very light and blows even in

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convection currents and if you found it only under the false floor it would show that somebody had put it there and had done something to hold it there. If considerable more quantities were found under the false floor than elsewhere, although small quantities were seen along the wall, I would say that the down had settled to the bottom and if it had gone through 3/4" holes I would not say that a current of air had nothing to do with it, but if it were there in quantities and no other place I would say that someone had put it there. You would naturally expect to find down on the floor of an incubator when the air would settle to the bottom.

"XQ255 You never knew of any instance where down went through 3/4" holes and settled underneath the false floor?

A I have known where it goes through holes smaller than that and settles.

XQ256 Have you ever known of any instance where that occurred in an incubator?

A Oh, yes, lots of them.

XQ257 Where?

A You take any of your long type of machine it will settle down underneath the moisture pan, underneath what they call the nursery tray, and it will sift out through the holes that are less than 3/4" and settle on the floor of your room.

XQ258 Is the floor of the room perforated with holes?

A No ,but the floor of an incubator has much slighter openings in.

XQ259 I didn't ask you that. I asked you where the floor is perforated with holes 3/4" in diameter, do you

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know of any instance in any incubator where you have seen down settle in down in through such holes?

A Not 3/4" because I don't know of any machines operated that way, but they have long slots and they settle into your hatchery room.

XQ260 Then the answer to my question is now you have never known of any instance I specify?

A If you want to pin it right down to your particular question.

XQ261 I want to pin it down and not have you ramble on here and talk of everything you think of.

A Is that cross examination?

XQ262 This is cross examination, yes. You are a witness on the (stand) right now.

A (No response)"

At St. Louis I heard the testimony of Messrs. Sears, Mr. & Mrs. Fullington and I believe Epperly. I also heard part of Mr. Hicken and possibly one other witness whose name I do not remember. None of those witnesses testified that the Fullington machine had been unsuccessful in its operation. I did not hear Mr. Rule's testimony about the Lawry incubator in use at Pacific, Missouri, in conjunction with the model introduced here in evidence, which I had never seen before this morning. I checked Mr. Rule's drawings with dimensions and measurements that I made of the Lawry machine. I first made measurements and drawings to scale in 1925 and then made more measurements when I visited the incubator at Pacific early this month. I checked the Rule Exhibit drawings, both from memory and the data of my measurements of the Lawry machine. I took actual measurements of,

(Deposition of Joseph I. Taggart)

I think, everything that is shown on the Rule drawings and I have checked them carefully enough to be satisfied that they are correct. I have checked each measurement thereon from physical data of my own measurements in my possession. I am not sure whether I have any of that data here. I just got home last night and some of it is still there. I checked the drawings in my hotel room at St. Louis on December 8 and 9, and then I checked them hurridly again this morning here. I think I could produce drawings if I had the time for it that would substantiate this in every detail.

"MR. TAULBEE: I will ask that counsel produce for examination and comparison physical data from which the witness has testified he has checked these drawings inasmuch as in his direct testimony the witness did not produce any such data and in many instances said that the measurements on the drawing exhibit were the same or correct as he had so measured the Lawry device at Pacific, which was no more than a matter of conclusion and not enabling the defendant's counsel to compare or to check such statement.

MR. ELY: What do you want us to do, find it?

MR. TAULBEE: I would like to have you offer it in evidence.

MR. ELY: I will offer in evidence what I please. These drawings have been testified to as correct representations and you haven't shown anything different by your witnesses. They testified they are correct. If you have any idea any measurements are wrong you can certainly question the witness about the specific measurement.

(Deposition of Joseph I. Taggart)

MR. TAULBEE: All right, I will ask then that all the witness' testimony as to the three drawings offered in evidence and the parts of those drawings and measurements thereon which he has testified to as being correct and as being identical or the same with measurements he actually made on visits at Pacific be struck from the record.

MR. ELY: I would call attention to the evidence that this witness not only checked these drawings with his measurements but made his own measurements as to these drawings."

I testified that the smaller 3/4" in diameter holes in the false ceiling were near the west wall of the Lawry incubator and the larger holes toward the east end of the room while the reverse was true, as to position, in the false floor. I did not actually measure the downwardly circulating currents of air in the Lawry egg chamber with the fan in operation. As to the resistance in the air ducts and as to whether or not those things were left in their positions when the machine was in operation I know only what has been explained to me by the people who operated the Lawry incubator. As to the damper it was so arranged that it could be adjusted in any one of a dozen positions and, as explained to me, it was so adjusted from time to time. I have never had an opportunity to measure the convection currents arising from 80,000 to 100,000 eggs maintained at incubating temperatures within a closed chamber with the trays superimposed one over another in a number of stacks, but I have measured the currents arising from eggs set in a 71 to 72,000 capacity machine. I know that Mr. Lawry's deposition

(Deposition of Joseph I. Taggart)

has been taken, but I know nothing about defendant being unable to take any rebuttal testimony thereinafter.

RE-DIRECT EXAMINATION

BY MR. ELY:

The cubical contents of the Fullington incubator, which I saw at St. Louis, were about four cubic feet; the cubical contents of the room we are in at the present time is close to two thousand cubic feet. The chances would be very slight that any air driven out of the Fullington machine would ever get back into that incubator placed in a room of this size. I know of no incubator that is operated in a room where the temperature is kept at 100°. Rooms where incubators are placed are, as a rule, kept at living room temperatures, varying between 65° and 75°. 80° is too warm for most conditions. With the fan operating continuously in the Fullington machine it would not be possible to hold a uniform temperature throughout the different parts thereof and the eggs would be dried out beyond all reason so it would be impossible to get a good hatch. In a room such as this the relative humidity at a temperature of 75° is only about 50 to 60 percent saturated. If the air herein were heated to 100° it would be reduced to between 15 and 25 percent saturation and for that reason would dry the chicks out very rapidly. The ordinary kitchen is drier than other rooms, particularly in the summer time, because of the additional heat therein and that would dry the eggs down very decidedly in the Fullington incubator. The continual operation of the fans are essential to the Smith incubator and if stopped, even for a very short period, the hatch would be affected. It is quite a serious matter if the fans are

(Deposition of Joseph I. Taggart)

off for any extended period, by which I mean even a half hour. The length of time they are off affects the seriousness of it. I have known of fans being discontinued for fifteen hours and practically ruining all eggs in the machine.

RE-CROSS EXAMINATION

BY MR. TAULBEE:

I have studied conditions of atmosphere in the various sections of the United States and I know that over a period of thirty-five years the humidity in Missouri averaged between 60 and 65 percent. In the ordinary kitchen the relative humidity is lower than the outside air. Although I have never examined any particular kitchen I have studied the conditions in Missouri. I do not know what the percentage of moisture was in the Fullington kitchen, although I have been in that kitchen, but, of course, not during the operation of the Fullington incubator. Assuming that the Fullington fan operated continuously the dryness of the air could have been compensated for by the addition of moisture with extensive apparatus, but that would not be the arrangement as Mr. Fullington provided. In the light of what we know now the humidity could have been increased so as to compensate for the drying out effect of continuously running the Fullington fan.

RE-DIRECT EXAMINATION

BY MR. ELY:

I do not believe a pan or saucer surface could be placed in the Fullington machine and compensate for the loss of moisture with the fans running continuously. More extensive apparatus would have to be provided.

(Deposition of George Ruede)

RE-CROSS EXAMINATION

BY MR. TAULBEE:

There had to be moisture present if a good hatch of chicks was obtained from the Fullington machine.

RE-DIRECT EXAMINATION

BY MR. ELY:

I understand that the Fullington hatches were not attained with the fan running continuously.

(Thereinafter follows the notarial certificate under which the preceding depositions were taken.)

(Whereupon counsel for the respective parties herein returned to St. Louis, Missouri, where the deposition of GEORGE RUEDE was taken on the 22nd day of December, 1930.)

GEORGE RUEDE,

of lawful age, being produced, sworn and examined on the part of the plaintiffs, deposes and says:

DIRECT EXAMINATION

BY MR. ELY:

I am 33 years old, reside at Pacific, Missouri, and am at present employed by the Pacific Refrigerator plant as a stationary fireman. I became acquainted with Mr. Rolla Lawry around 1914 and worked for him at least three years. I worked in and around the Lawry mammoth incubator at the plant of the Pacific Refrigerator Company for two or two and a half months, beginning February 15, 1916. So far as I know the Lawry incubator today remains unchanged in its structural details with respect to the time I worked in it. I was last in the

(Deposition of George Ruede)

incubator room last Saturday. I have been working at the Pacific Refrigerator Company's plant for six years and, of course, I have been in and out of the incubator a number of times during that period.

While working for Mr. Lawry my duties were to turn and candle eggs, take the chicks out, and clean up after the hatch. Eggs were put into the Lawry incubator for the purpose of hatching, chicks were actually hatched and some eggs did not hatch out and I don't know just why they did not.

I remember testifying in the case of Buckeye Incubator Company and Samuel B. Smith v. William F. Hillpot, at Trenton, New Jersey, May 23rd, and 24th, 1927. I am asked whether I remember testifying in that case as follows:

"My experience was that he put in those eggs and would get them to the right temperature and would slip in a couple of thousand more, and in order to bring the temperature up on those he would burn up his first ones."

(Whereupon counsel for defendant objected to the above question on the grounds that plaintiffs' counsel was attempting to impeach his own witness and without any foundation for such an attempt.)

Witness resumed:

I remember making the above statement but that is a thing that I want to explain. I did not mean by saying those eggs were burned that they were cooked, or boiled, or anything like that. The temperature would run up on the eggs and probably injure the chicks in a way so that they wouldn't hatch. I do not mean to say that the temperature was kept up there for three or four days,

(Deposition of George Ruede)

but it was probably maintained there for a number of minutes and perhaps a half hour. I do not know why some of the eggs did not hatch, whether the overheating did it, whether those eggs contained weak germs or were infertile. If there were chicks in the eggs, they could not have been infertile. There could have been infertile eggs in the incubator because we didn't get all the way through; we got some of them. I hauled away some of the eggs and buried them.

"Q How many eggs did you haul away at a time?

A Well, there were barrels of them.

Q What kind of barrels?

A Well, apple barrels, we generally used.

Q How many barrels did you haul away?

A That is hard to say, because it seems to me there were three or four barrels maybe.

Q At a time?

A Yes; they weren't all eggs, either; there were shells and some chicks in the eggs; maybe, as I said before, some infertiles, but they were eggs.

Q What was the cause of all those bad eggs, do you know?

A No, sir, I don't know."

"Q I direct your attention to the printed copy of the record which I have, and ask you to look at cross question 14 and refresh your recollection if you can by that testimony that you gave at the former case.

BY MR. TAULBEE: I object to this procedure on the ground stated in my last objection, and further as being an improper method of direct examination, improper method of handling counsel's own witness, this record

(Deposition of George Ruede)

not being in evidence in the case, not being a proper way or method to refresh the witness' memory; copy of the record not being properly identified, and further, that the witness never having seen this record before, doesn't even now know what it is.

BY MR. ELY: Does that refresh your recollection as to what the cause of the bad eggs was?

BY MR. TAULBEE: Same objection."

The witness resumed:

That is what I said there but I don't know about that. I don't know whether that would be the whole cause of the thing going bad on that hatch for there may have been some other things that I know nothing about. The hatches did not altogether go bad.

Mr. Lawry did not give me any instructions about temperature when a new batch of eggs were set in the incubator. I had nothing to do with regulating the temperature as Mr. Lawry was supposed to watch that. The temperature for the fresh eggs would have to be higher than what was necessary for the older eggs, I know that, and that is what Mr. Lawry tried to accomplish. I do not believe Mr. Lawry cooled down the temperature of the older eggs when he was setting new eggs in the incubator, but, as well as I remember, he raised the temperature when he put the fresh eggs in.

I quit working for Mr. Lawry on good terms and because there was no more work for me to do. He asked me to come to town and work in the pencil factory. I quit working in the mammoth incubator when Mr. Lawry sent me back to the farm to take care of the young chicks. As I have said, I worked in the incubator for about two

(Deposition of George Ruede)

and a half months and in that length of time there couldn't have been more than two or three hatches at the most. I remember taking eggs out of the incubator and I remember we had as many as three or four barrels of them, but I cannot remember each and every hatch and whether it happened that way or not. There were no different hatches with different results so far as I know. I spoke to these gentlemen who represent the defendant herein, yesterday, and talked with Mr. Aitken two weeks ago.

(Whereupon counsel for plaintiffs offered in evidence the deposition given by the witness in the aforementioned case of Buckeye Incubator Company and Samuel B. Smith vs. William H. Hillpot, with the request for permission to substitute a certified copy thereof at a later date and asked that the said deposition be marked, plaintiffs' Exhibit A-9. Counsel offered the said deposition on the ground of surprise, and stated that he had previously talked to the witness who had indicated that his testimony would be the same as given in the former case. Counsel also claimed the right to continue the examination of the witness on the ground of surprise.

Objection was made to the offer of the deposition in evidence by counsel for defendant upon the ground that counsel for plaintiffs had made self serving statements and which were erroneous, that there has been no departure in the testimony or change in the witness' statements and further that the deposition is uncertified, unproved, and as amounting to an attempt to impeach his own witness without foundation. After all of which the said certified copy of the deposition referred to was marked

by the notary for the purpose of identification as "plaintiffs' Exhibit A-9", and which was in words and figures as follows:

"UNITED STATES DISTRICT COURT,
DISTRICT OF NEW JERSEY.

BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,	:	
Plaintiffs,	:	
vs.	:	IN EQUITY
WILLIAM F. HILLPOT,	:	No. 2026

* * * * * * * * * * * * * *

"TESTIMONY OF GEORGE RUEDE.

GEORGE RUEDE, called and sworn as a witness in behalf of the plaintiffs, testified as follows:

DIRECT EXAMINATION BY MR. BOWMAN:

MR. PAIGE: Can we stipulate about this witness.

MR. BOWMAN: He was working for Mr. Lawry in 1916, part of the time hauling out the bad eggs, barrels of them. If you will stipulate that it was not satisfactory—

MR. PAIGE: I cannot stipulate that.

Q1 Your occupation and residence.

A Stationary fireman; Pacific, Missouri.

Q2 Were you acquainted with Rolla Lawry in 1916?

A Yes.

(Deposition of George Ruede)

Q3 Did you work for him?

A Yes, I worked for him for over three years.

Q4 Do you recall working for him on an incubator that he had at Pacific, Missouri?

A Two and one half months about.

Q5 What time of the year was that and what year?

A It was in 1916, February 15th when I went to work.

Q6 And when did you quit?

A I worked about 2½ months on the incubator.

Q7 Are you able to recall as to the experience he had with reference to burning up eggs or injuring them in that incubator?

A Yes.

Q8 Please explain what you recall.

A My experience was that he put in those eggs and would get them to the right temperature and would slip in a couple of thousand more and in order to bring the temperature up on these he would burn up his first ones.

Q9 Did you have anything to do with hauling away the eggs that had been destroyed?

A Yes.

Q10 What is the fact as to the quantities you have hauled away during that time?

A I do not understand the question.

THE COURT: How many did you haul away?

A Oh, barrels of them.

CROSS EXAMINATION BY MR. PAIGE:

XQ11 How long does it take to hatch an ordinary chicken egg?

A 21 days.

XQ12 And you were there how long?

(Deposition of George Ruede)

A About 2½ months.

XQ13 How many hatches did you run through in that time?

A Well, I do not know. I was not there when the first hatch came off. I started after a hatch or two came off to work there.

XQ14 What was the cause of all these bad eggs, do you know?

A He would burn them up.

XQ15 What do you mean by that? I do not think the court understands it.

A He would overheat them.

XQ16 What do you mean "overheat them?"

A Get them too hot.

THE COURT: Run the temperature above 105?

A Yes.

XQ17 Is that what you understand that he would run the temperature about 105?

A Sometimes higher in order to get others up to the right temperature.

XQ18 What temperature should they have?

A 102 and 103, no higher.

XQ19 Were you in charge of the incubator when it was being used to cook the eggs?

A Yes, but it was not my fault.

XQ20 Whose fault was it?

A Lawry's.

XQ21 Lawry told you to run the temperature up to 105 and 106?

A He had to. He did it.

XQ22 What do you mean by 'he had to?'

(Deposition of George Ruede)

A In order to bring the temperature up on the new batch of eggs he put in he could not let the temperature down on those already in, or he would spoil those too.

XQ23 Where were the eggs that were about to hatch in the incubator?

A On trays. Racks were built about 8 or 9 feet and they were placed on trays.

XQ24 But when you put the fresh eggs in, did you put them next to the floor or next to the ceiling?

A I do not remember.

XQ25 Don't you know where you took the eggs out to throw them away? Were they down next to the floor or next to the ceiling?

A No, I do not remember.

XQ26 You took out barrels, and barrels and barrels of them and you do not remember?

A Yes, but they got shoved around in turning. The trays were not all put in the same place in shifting.

XQ27 He used what is called stage incubation, did he?

A I suppose so.

XQ28 I want to get the fact. Do you know what I mean by stage incubation?

A No.

XQ29 What I mean is this, that instead of filling that incubator with fresh eggs there was a batch put in there today, we will say, and then a few days later another batch is put in, not filling the incubator, so that you had in the incubator at different times eggs in different stages of incubation and eggs in different stages of incubation at the same time, some that had been in

(Deposition of George Ruede)

some days and some that had just been put in. Is that the way he ran that?

A That is the way he tried to run it but it did not pan out.

XQ30 Do you think there were as many as forty eggs out of 100 that were spoiled?

A Yes.

XQ31 Are you sure that he had fresh eggs when he started.

A Yes, I am pretty sure.

XQ32 You know you cannot hatch a bad egg?

A He had cooperatives.

XQ33 Where did he get his supply of fresh eggs from?

A From his cooperatives.

XQ34 That is, people in the neighborhood?

A Yes.

XQ35 Where was this place where the hatching took place?

A Pacific, Missouri.

XQ36 A village called Pacific, in the State of Missouri?

A Yes.

XQ37 Why did you leave Mr. Lawry's employ?

A He laid me off.

XQ38 You were fired?

A No, I was not fired. He laid me off.

XQ39 Why did he lay you off?

A He blowed up.

XQ40 He got mad at you, you mean?

(Deposition of George Ruede)

A No, he did not get mad at me. We are on good terms today so far as that is concerned.

XQ41 When did you think that he blew up? When you were discharged?

A No, not when I was discharged. I worked a year and a half after I left the incubator, so I was not fired.

XQ42 For him?

A Yes, sir.

XQ43 Don't you know that he ran that incubator for more than a year?

A Yes, but I was not there over 2½ months.

XQ44 And they were throwing away eggs by the barrel all the time?

A Yes.

THE COURT: After you left there, it worked, didn't it?

A No, it did not.

XQ45 I understood you to say that the reason you left him or were laid off was that he blew up, and I interpreted that to mean that he went out of the incubator business. Now just what did you mean by that? He evidently did not go out of the incubator business until long after you left him?

A He did not operate it for about a year afterward.

XQ46 Did you leave there at the time when he could not get the gas for heating purposes?

A I was already gone then.

XQ47 Beg pardon.

A I had already left.

XQ48 You left before that?

A Yes.

(Deposition of George Ruede)

XQ49 And he was running the incubator when you left, was he?

A Yes.

REDIRECT EXAMINATION BY MR. BOWMAN:

RDQ50 You referred to changes in the trays. What other changes were made, if any, in the incubator while you were there?

A He did not make any while I was there.

RDQ51 Do you know whether or not any changes were made in the incubator?

A No.

* * * * * * * * * * * * * * * * *

DISTRICT COURT OF THE UNITED STATES
OF AMERICA
DISTRICT OF NEW JERSEY

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I, George T. Cranmer, Clerk of the District Court of the United States of America, for the District of New Jersey, in the Third Circuit, do hereby certify the foregoing to be a true copy of the original TESTIMONY OF GEORGE RUEDE, on file, and now remaining among the records of the said Court, in my office.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the seal of the said Court, at Trenton, in said District, this 2nd day of Jan., nineteen hundred and thirty-one.

(Signed) George T. Cranmer
Clerk, District Court, U. S.
By (Signed) L. M. Zarp
Deputy.

(SEAL)

(Deposition of George Ruede)

EQUITY—2026

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

- - - - -

BUCKEYE INCUBATOR COMPANY and
SAMUEL B. SMITH,

Plaintiffs,

vs.

WILLIAM F. HILLPOT,

Defendant.

- - - - - -

TESTIMONY OF GEORGE RUEDE.

- - - - - -

Transcript of proceedings taken at Trenton, N. J., before Hon. Joseph L. Bodine, May 23 and 24, 1927.

Appearances: Border Bowna, Esq.,
Charles E. Brock, Esq.,
for the Plaintiffs,

Arthur E. Paige, Esq.,
Frank E. Paige, Esq.,
for the Defendant.

FILED Sep. 9, 1927 at 9 o'clock A. M.
Dub. George T. Cranmer,
F. Clerk."

(Here ends the portion of the Hillpot testimony read into this record.)

(Deposition of George Ruede)

CROSS EXAMINATION

BY MR. TAULBEE:

I talked to Mr. Ely before this examination and I have also talked with Mr. Taggart. My duties during the two and a half months that I worked in the incubator were to turn eggs, candle them and to take chicks out. I did not make any computations in regard to the incubator in order to determine the profits and things of that kind. I was seventeen years old at the time and had had no previous experience in egg incubating at that time. I did not keep records of the hatches as they were taken off as to the percentage of hatch. I understand that in the use of any incubator there are some eggs that do not hatch and I also realize that that may be the result of infertile eggs in the beginning or may result from a number of other causes. Of course, when eggs do not hatch in an incubator they must be disposed of in some way and all I did in the incubator at Pacific was to haul out and bury the eggs that did not hatch. As I have said it is customary to dispose of them in some way.

I actually know, as a matter of fact, that some eggs do not hatch because of weak germs therein. The Lawry incubator was in operation during the egg season of 1917, but I did not work in it.

I did not candle all of the eggs that I put into the Lawry incubator because I did not have time to do so. I worked only at night and was very seldom around during the

day time. As to the number of eggs which that incubator held I know only what Mr. Lawry said. He told me it was 124,000, but I may be mistaken on that. I do know that there were thousands of eggs in the incubator and that there were thousands of chicks hatched therein. Those chicks were sold to different parties in different parts of the country. Those were good healthy looking chicks which were shipped.

In referring to Mr. Lawry and in saying that "he blowed up" in the deposition of mine read into this record, I did not mean that the incubator blew up, but I did mean, or thought rather, that it wasn't a paying proposition and he just merely closed down. I did not actually know why Mr. Lawry did close down in 1917 and I never kept any figures on whether or not there was any profit made from the use of that incubator. I kept no record of the percentage of hatch and for all I know Mr. Lawry may have had a number of reasons for leaving Pacific, Missouri. I know nothing about that.

I knew the Mr. Scott who was in charge of the incubator at Pacific while I was working there. I think Mr. Scott was in charge of the plant a year or so before I quit, after which he sent me to the farm.

I remember Frank Miller who worked in the incubator at the same time that I did. The incubator for a number of years now has been used for cold storage purposes and at one time was used for drying eggs. The power

(Deposition of George Ruede)

fan has been taken from the incubator and was last used so as to reverse the draft. Likewise, the thermometer has been removed. I have not examined the incubator recently to determine just what differences there are now in it than when I worked in it. I go in the incubator now once or twice a week and, outside of the removal of the fan and the thermometer and the door, there have been no changes in it and practically none in the paneling above or below, nor in the air duct. There have been no changes in the heater room except that the coils have been taken out.

RE-DIRECT EXAMINATION

BY MR. ELY:

When I worked on the incubator there were three or four water pans in between the two heating coils in the heating chamber.

(Thereinafter follows the notarial certificate under which the preceding depositions were taken.)

[Endorsed]: Filed Mar 20 1933 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

Stipulation Approving Condensed Statement of Evidence Pursuant to Equity Rule 75.

IT IS HEREBY STIPULATED AND AGREED by and between plaintiffs and defendant in the above entitled cause, by and through their solicitors and counsel of record, that the annexed condensed statement of evidence on the appeal of defendant heretofore taken to the United States Circuit Court of Appeals for the Ninth Circuit is true, complete and properly prepared, and may forthwith be approved by Hon. Paul J. McCormick, a Judge of this Court, and when so approved shall be filed in the Clerk's office and become part of the record for the purpose of said appeal.

This stipulation shall be printed and included in the transcript on appeal.

Dated, Los Angeles, California, March 14th, 1933.

Lyon & Lyon
E. L. Ely
Leonard S Lyon
Geo. C. McConnaughey
SOLICITORS AND COUNSEL FOR PLAINTIFFS

Raymond Ives Blakeslee
Kelly L. Taulbee
SOLICITORS AND COUNSEL FOR DEFENDANT.

Annexed Condensed Statement of Evidence

APPROVED, March 20, 1933.

Paul J McCormick
U. S. DISTRICT JUDGE

[Endorsed]: Filed Mar 20 1933 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

WRIT OF INJUNCTION

THE PRESIDENT OF THE UNITED STATES OF AMERICA TO

HERBERT H. WAXHAM, doing business as WAXHAM HATCHERIES, YOUR EMPLOYEES, WORKMEN, AGENTS AND ATTORNEYS.

GREETING:

WHEREAS, it has been represented to us in our District Court of the United States for the Southern District of California, Central Division, in the Ninth Circuit, on the part of SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, that they have lately exhibited their Bill of Complaint in our said District Court against you, HERBERT H. WAXHAM, doing business as WAXHAM HATCHERIES, for infringement of United States Letters Patent Number 1,262,860;

NOW, THEREFORE, in consideration thereof and of the particular matters in the said bill set forth, and pursuant to a Final Decree entered in said cause on August 2, 1932, we do strictly command and perpetually enjoin you, the said HERBERT H. WAXHAM, doing business as WAXHAM HATCHERIES, your employees, workmen, agents and attorneys, under the pains and penalties which may fall upon you and each of you in case of dis-

obedience, that you forthwith do absolutely desist and refrain forever hereafter from directly or indirectly infringing upon claim 1 of said United States Letters Patent number 1,262,860, which claim reads as follows:

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

WITNESS the Honorable Paul J. McCormick, Judge of the United States District Court for the Southern District of California, Central Division, at the City of Los Angeles in the Southern District of California, the Ninth Circuit, this 17th day of August, 1932.

[Seal]

R. S. ZIMMERMAN, Clerk
By Edmund L. Smith,
Deputy Clerk

RETURN ON SERVICE OF WRIT.

United States of America,
Southern DISTRICT OF California } ss:

I hereby certify and return that I served the annexed Writ of Injunction on the therein-named Herbert H. Waxham, doing business as Waxham Hatcheries by handing to and leaving a true and correct copy thereof with him personally at Van Nuys in said District on the 17th day of August, A. D. 1932

A. C. SITTEL
U. S. Marshal.

By Morris Tovil
Deputy

[Endorsed]: Filed Sep 7 1932 R. S. Zimmerman, Clerk By C. A. Simmons, Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

PETITION FOR APPEAL

TO THE HONORABLE PAUL J. McCORMICK, U. S. DISTRICT JUDGE:

The above named defendant, feeling aggrieved by the final decree made, entered and filed in the above entitled cause on the 2nd day of August, 1932, which decree found the Smith Patent No. 1,262,860, in suit, valid and infringed by the defendant as to claim 1 thereof, with costs to plaintiff, and directing the issuance of a writ of

injunction, does hereby appeal from said decree to the United States Circuit Court of Appeals for the Ninth Circuit, for the reasons set forth in the Assignment of Errors filed herewith, and prays that the appeal be allowed and that citation be issued as provided by law, and that a transcript of the record, reports of special Master, proceedings, papers and documents upon which said decree was based, duly authenticated, together with the documentary, paper, physical and any other exhibits on file be sent to the United States Circuit Court of Appeals for the Ninth Circuit under the rules of such Court and under the statutes in such case made and provided, without the necessity of reproducing superfluous documentary, paper and physical exhibits; and your petitioner further prays that the proper order relating to the security to be required of him, be made; and that such security be fixed in an amount to be determined as proper to act also as a stay or supersedeas of the judgment for costs in the District Court as in said decree hereby appealed from.

DATED: Los Angeles, California, August 12, 1932.

HERBERT H. WAXHAM
By Raymond Ives Blakeslee
Kelly L. Taulbee
Solicitors and Counsel for Defendant.

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ASSIGNMENT OF ERRORS

Now comes the above named defendant, Herbert H. Waxham and files the following assignment of errors upon which he will rely upon the prosecution of his appeal in the above entitled cause from the final decree made, filed and entered herein August 2, 1932, holding the Smith patent No. 1,262,860, in suit, valid and infringed as to claim 1 thereof, with costs to plaintiffs and providing for issuance of an injunction.

That the United States District Court for the Central Division of the Southern District of California erred:

I.

In not ordering a dismissal of the bill of complaint.

II.

In finding the Smith patent No. 1,262,860, in suit, valid as to claim 1 thereof.

III.

In finding the Smith patent No. 1,262,860, in suit, infringed by the defendant as to claim 1 thereof.

IV.

In not finding the purported invention of claim 1 of the Smith patent No. 1,262,860, in suit, to be totally devoid of invention and therefore invalid.

V.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, to be devoid of invention as being merely the result of ordinary mechanical skill, and therefore invalid.

VI.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, to be totally devoid of invention over the long practiced egg incubator and hatching art, and therefore invalid.

VII.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, to be totally devoid of invention because of the condition of the incubator and allied arts, and therefore invalid.

VIII.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, to be devoid of invention and invalid because of the admissions of the patentee of record.

IX.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, to be void as being for an aggregation of old and well known steps, methods and features used in similar combinations and to produce similar or identical functions long prior to the alleged invention of the said patent.

X.

In not holding claim 1 of the Smith patent No. 1,262,860, in suit, upon its face to have been erroneously and illegally issued for a process or method not the subject of patenting under the United States Statutes.

XI.

In not so limiting claim 1 of the Smith patent No. 1,262,860, in suit, in view of the limitations imposed upon it by the file wrapper and patent office proceedings, as to prevent a finding of infringement thereof.

XII.

In not so limiting claim 1 of the Smith patent No. 1,262,860, in suit, in view of the prior incubating and allied arts, as to prevent a finding of infringement thereof.

XIII.

In not limiting claim 1 of the Smith patent No. 1,262,860, in suit, to use of the precise structure disclosed, described and claimed in the said patent, and therefore not finding non-infringment thereof.

XIV.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, incapable of infringement by those things, practices, steps and methods complained of in the bill of complaint herein because of the necessary limitations to be imposed upon said claim 1 of the said patent by well known things, practices, steps and methods in the incubating and allied arts.

XV.

In not finding defendant's practice complained of in this suit to be differentiated from the purported invention of claim 1 of the Smith patent No. 1,262,860, in suit, because of a total difference in operation, steps and method and practice.

XVI.

In not ordering non-infringement of claim 1 of the Smith patent No. 1,262,860, in suit, because of a total difference in construction and inter-relation of parts and features of the incubator used by the defendant and incapable of use in practice of the method recited in said claim.

XVII.

In not finding claim 1 of the Smith patent No. 1,262,860, in suit, invalid in that it reflects no novelty in method, steps or practices over and beyond the prior incubating and associated arts.

XVIII.

In not ordering the bill of complaint herein dismissed because of total want of equity.

XIX.

In decreeing that said plaintiffs have costs against defendant.

XX.

In failing to find and decree and order that plaintiffs were and are not entitled to the relief prayed for in their bill of complaint, including injunction and costs.

XXI.

In affirming the Master's Report in this cause.

XXII.

In affirming the Master's Supplemental Report in this cause.

XXIII.

In not denying and refusing to follow the Master's Report in this cause.

XXIV.

In not denying and refusing to follow the Master's Supplemental Report in this cause.

XXV.

In refusing to hear and entertain defendant's motion for a rehearing after minute order of June 30, 1932.

XXVI.

In denying defendant's motion for a rehearing after minute order of June 30, 1932.

XXVII.

In not decreeing claim 1 of the Smith patent No. 1,262,860, in suit, invalid for functionality.

XXVIII.

In disregarding the force and effect of prior adjudications of the said patent in suit and claim 1 thereof in other districts and circuits.

XXIX.

In finding infringement by defendant of claim 1 of the Smith patent No. 1,262,860, in suit, in view of the prior adjudications of the said patent in other districts and circuits and particularly wherein and whereby said claim 1 was strictly limited to use of the precise structure and incubator disclosed, claimed and described in the said patent in suit, including such a decision in the District of Idaho, in the Ninth Circuit.

XXX.

In not following the rule of comity with respect to the question of infringement.

XXXI.

In decreeing the issuance of an injunction directed to the defendant.

XXXII.

In finding that the matter of the order of eggs in the incubator is determinative of the question of infringement or non-infringement.

XXXIII.

In not finding that irrespective of the order of eggs in the incubator, the question of infringement or non-

infringement involves particularly the paths or courses or channels or directions of movement of the air within the incubator.

XXXIV.

In overruling defendant's exceptions both to the Special Master's Report and Supplemental Report.

XXXV.

In finding that the question of infringement is close, and in not finding contrarwise that non-infringement clearly appears.

XXXVI.

In not finding claim 1 of the Smith patent No. 1,262860, in suit, not infringed in that the method thereof is strictly limited upon the face of said patent, by the patentee, to the specific use of the specific device pictured and described in said patent.

WHEREFORE, appellant prays that said decree be reversed and that said District Court of the Central Division for the Southern District of California be ordered to enter a decree reversing the final decree appealed from and in favor of defendant in this cause, and in further ordering the bill of complaint herein dismissed, with costs to defendant, Herbert H. Waxham.

HERBERT H. WAXHAM
By Raymond Ives Blakeslee
Kelly L. Taulbee
Solicitors and Counsel for Defendant.

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ORDER ALLOWING APPEAL

On motion of RAYMOND IVES BLAKESLEE and KELLY L. TAULBEE, ESQS., solicitors and Counsel for defendant above named,

IT IS HEREBY ORDERED that an appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the decree heretofore made, filed and entered herein on the 2nd day of August, 1932, holding the Smith Patent No. 1,262,860, in suit, valid and infringed as to claim 1 thereof, with costs to plaintiffs, and providing for the issuance of an injunction, be, and the same is hereby allowed, and that a certified transcript of the record, Master's reports, proceedings, papers, documents and stipulations, together with the documentary, paper, physical and any other exhibits be forthwith transmitted to the said United States Circuit Court of Appeals for the Ninth Circuit, without the necessity of reproducing superfluous exhibits; and that citation be issued as provided by law.

IT IS FURTHER ORDERED that said bond on appeal be fixed in the sum of Two Thousand Two Hundred Dollars ($2,200.00) to act as a bond for costs on appeal, and to stay or supersede the operation and effect of the judgment for costs in the District Court as provided in said decree, or the operation and effect of any writ of

execution thereunder, until the coming down of the mandate herein upon determination of said appeal.

DATED: Los Angeles, California, August 12th, 1932.

Paul J. McCormick
U. S. DISTRICT JUDGE

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

BOND FOR COSTS ON APPEAL AND FOR STAY OR SUPERSEDEAS OF JUDGMENT FOR COSTS IN DISTRICT COURT

KNOW ALL MEN BY THESE PRESENTS, that MASSACHUSETTS BONDING AND INSURANCE COMPANY, a corporation of the Commonwealth of Massachusetts, having its principal place of business at the City of Boston, in said state, and a place of business at Los Angeles, California, in said above District, is held and firmly bound unto SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY in the full and just sum of TWO THOUSAND TWO HUNDRED DOLLARS ($2,200.00) to be paid to said SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, their attorneys, executors, administrators and assigns, to which payment well and truly to be made MASSACHUSETTS BONDING AND INSURANCE

COMPANY does bind itself and its successors and assigns by these presents.

SEALED with the seal of said MASSACHUSETTS BONDING AND INSURANCE COMPANY this 12th day of August, 1932;

WHEREAS, lately at a District Court of the United States for the Southern District of California, Central Division, in a suit pending in said Court between SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs, and HERBERT H. WAXHAM, Defendant, a final decree was made, entered and filed holding the Smith Patent No. 1,262,860, in suit, valid and infringed as to claim 1 thereof and ordering the issuance of an injunction directed to said defendant, and with allowance of taxable costs to said plaintiffs, and the said Herbert H. Waxham having obtained an appeal and filed a copy thereof in the Clerk's office of said Court to reverse the said decree in the aforesaid suit, and ordering that a citation be issued and directed to Samuel B. Smith and The Buckeye Incubator Company, as provided by law, citing and admonishing them to be and appear at a session of the United States Circuit Court of Appeals for the Ninth Circuit to be held at the City of San Francisco, and ordering that the operation and effect of the judgment for costs under said decree be stayed or superseded.

NOW, the condition of the above obligation is such that if the said Herbert H. Waxham shall prosecute his

appeal to effect and answer all costs on said appeal and of the District Court as per said judgment entered for costs, if he fails to make his plea good, and should said appeal be determined and mandate of said United States Circuit Court of Appeals for the Ninth Dircuit be received and filed in this Court, then the above obligation to be void; else to remain in full force, virtue and effect.

SEALED AND DELIVERED IN THE PRESENCE OF:

MASSACHUSETTS BONDING AND INSURANCE COMPANY

By Joseph A. Boland

Joseph A. Boland – Attorney in fact.

[Seal]

STATE OF CALIFORNIA,)
) ss.
County of Los Angeles.)

On this 12th day of August A. D. 1932 before me, Dorothy Allen, a Notary Public in and for the County of Los Angeles personally appeared Joseph A. Boland, Attorney-in-Fact of the Massachusetts Bonding and Insurance Company, to me personally known to be the individual and officer described in and who executed the within instrument, and he acknowledged the same, and being by me duly sworn, deposes and say that he is the said officer of the Company aforesaid, and the seal affixed

to the within instrument is the corporate seal of said Company, and that the said corporate seal and his signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in the City of Los Angeles County of Los Angeles the day and year first above written.

[Seal] Dorothy Allen

Notary Public in and for the County of Los Angeles, State of California. My Commission expires Sept. 3, 1934.

I hereby approve the foregoing bond.

DATED: August 12th, 1932.

Paul J. McCormick

U. S. District Judge

Examined and recommended for approval as provided in Court Rule 28.

Raymond Ives Blakeslee

Kelly L. Taulbee

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith, Deputy Clerk

[TITLE OF COURT AND CAUSE.]

PETITION FOR CROSS-APPEAL.

The above-named plaintiffs, conceiving themselves aggrieved by the Final Decree rendered and entered in the above-entitled cause on August 2, 1932, do hereby cross-appeal from said decree to the Circuit Court of Appeals for the Ninth Circuit for the reasons set forth in the assignment of errors filed herewith, and the plaintiffs pray that their cross-appeal be allowed and that citation be issued as provided by law, and that a transcript of the record, proceedings and documents upon which said decree was based, duly authenticated, be sent to the United States Circuit Court of Appeals for the Ninth Circuit, under the rules of such Court in such cases made and provided.

Your petitioners further pray that proper order be made in respect to the security required of the petitioners on said cross-appeal.

Dated this 12th day of August, 1932.

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs,

By A. L. Ely
Leonard S. Lyon
George C. McConnaughey,
Their attorneys.

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman. Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

CROSS ASSIGNMENT OF ERRORS.

Now come the plaintiffs, SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, in the above-entitled cause, and in pursuance of and in obedience to the rules and practices of the United States Circuit Court of Appeals for the Ninth Circuit made and provided, make and file the following cross-assignment of errors upon which they will rely in the prosecution of their cross-appeal from the Final Decree made and entered the 2nd day of August, 1932, in the above-entitled cause, to-wit:

1. That the Court erred in holding that the defendant has not infringed claim 2 of U. S. Letters Patent No. 1,262,860 in suit.

Whereupon, plaintiffs specifically pray that said decree be reversed only insofar as it holds that the defendant has not infringed claim 2 of the patent in suit.

Dated this 12th day of August, 1932.

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs,

By A. L. Ely,
Leonard S. Lyon,
George C. McConnaughey,
Their attorneys.

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ORDER ALLOWING CROSS-APPEAL.

On motion of the Solicitors for Plaintiffs, SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY,

IT IS HEREBY ORDERED that a cross-appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the Final Decree rendered and entered in the above-entitled cause on the 2nd day of August, 1932, is hereby allowed, and that a certified copy of the record, proceedings and documents in this cause be forthwith transmitted to the said Circuit Court of Appeals for the Ninth Circuit. It is further ordered that the bond on cross-appeal be fixed at the sum of Two Hundred and Fifty Dollars, ($250.00).

Dated this 12th day of August, 1932.

Paul J. McCormick
U. S. District Judge.

[Endorsed]: Filed Aug 12 1932 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

BOND ON CROSS-APPEAL.

KNOW ALL MEN BY THESE PRESENTS: That the CONTINENTAL CASUALTY COMPANY, a corporation organized and existing under the laws of the State of Indiana and duly licensed to transact business

in the State of California, is held and firmly bound unto HERBERT H. WAXHAM, doing business as WAXHAM HATCHERIES, defendant in the above-entitled suit, in the penal sum of Two Hundred Fifty and 00/100 Dollars ($250.00), to be paid to the said HERBERT H. WAXHAM, his successors and assigns, for which payment well and truly to be made the CONTINENTAL CASUALTY COMPANY binds itself, its successors and assigns, firmly by these presents.

Sealed with the corporate seal and dated this 13th day of August, 1932.

THE CONDITION of the above obligation is such that, Whereas, the said plaintiffs, SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, in the above entitled suit, are about to take a cross appeal to the United States Circuit Court of Appeals for the Ninth Circuit to reverse the decree in the aforesaid suit made and entered on August 2, 1932, only insofar as it holds that claim 2 of the patent in suit has not been infringed by the defendant; and

WHEREAS an order has been made and entered in said cause, dated August 12th, 1932, that the bond of plaintiffs on said cross-appeal be fixed at the sum of Two Hundred and Fifty and 00/100 Dollars ($250.00);

NOW, THEREFORE, the condition of the above obligation is such that if said plaintiffs, SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, shall prosecute their cross-appeal to effect, and answer all costs, if they fail to make good their cross-appeal, then this obligation shall be void; otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the corporate name of said Surety is hereunto affixed and attested by its duly authorized attorneys-in-fact at Los Angeles, California, this 13th day of August, 1932.

CONTINENTAL CASUALTY COMPANY

By H. L. Burford
and L. R. Villars
Attorneys-in-fact [Seal]

EXAMINED AND RECOMMENDED FOR APPROVAL AS PROVIDED IN RULE 28

Leonard S. Lyon
Attorney

STATE OF CALIFORNIA)
) ss.
County of Los Angeles)

On this 13th day of August 1932, before me, G. S. Bliss a Notary Public in and for the County and State aforesaid, residing therein, duly commissioned and sworn, personally appeared H. L. Burford and L. R. Villars known to me to be the persons whose names are subscribed to the within instrument as the attorneys-in-fact of the Continental Casualty Company, and acknowledged to me that they subscribed the name of the Continental Casualty Company thereto as principal and their own names as Attorneys-in-fact.

[Seal] G. S. Bliss
Notary Public in and for the County of Los Angeles, State of California

I HEREBY APPROVE THE FOREGOING BOND AND THE SURETY THEREON: this Aug. 23, 1932

Paul J. McCormick
U. S. District Judge.

[Endorsed]: Filed Aug 25 1932 R. S. Zimmerman, Clerk By C. A. Simmons, Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

STIPULATION AND ORDER RE PRINTED RECORD

IT IS HEREBY STIPULATED AND AGREED by and between counsel for the above respective parties that the title of this cause and the designation of this Court shall be omitted from all pleadings, documents and papers, with the exception of the Bill of complaint, which shall comprise the printed record and book of exhibits herein, and, likewise, that the backs of all such pleadings, documents and papers, and all readings thereon, shall be omitted with the exception thereon of the District Court's filing stamp and endorsement.

DATED: Los Angeles, California, Feb'y 23 1933.

Raymond Ives Blakeslee,
Kelly L. Taulbee,
Solicitors and Counsel for Defendant.

A. L. Ely,
Leonard S. Lyon,
George C. McConnaughey,
Solicitors and Counsel for Plaintiffs.

APPROVED AND SO ORDERED:

Paul J. McCormick
U. S. District Judge.

[Endorsed]: Filed Mar 20 1933 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk

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[TITLE OF COURT AND CAUSE.]

ORDER

Upon application of Solicitors and counsel for defendant-appellant above, and for good cause shown, it is hereby

ORDERED that the time for filing the transcript on the above appeal and docketing said appeal with the Clerk of the U. S. Circuit Court of Appeals for the Ninth Circuit be and hereby is extended to and including May 10, 1933.

Dated, Fresno, California, April 10th, 1933.

Paul J. McCormick
U. S. District Judge

[Endorsed]: Filed May 4 1933 R. S. Zimmerman, Clerk By Edmund L. Smith Deputy Clerk.

[TITLE OF COURT AND CAUSE.]

STIPULATION AND ORDER

IT IS HEREBY STIPULATED AND AGREED by and between counsel for the above respective parties to this appeal that all exhibits of any nature whatsoever filed in this cause either before the Special Master in Chancery or before the Court upon exceptions to the Master's two reports, and not appearing in the "Condensed Statement of Evidence Pursuant to Equity Rule 75, For Printed Transcript of Record on Appeal", or in the printed book of exhibits, shall be transmitted to the Clerk of the Circuit Court of Appeals for the Ninth Circuit together with the mechanical exhibits as physical exhibits.

Dated, Los Angeles, California, February 23, 1933.

A. L. Ely,
Leonard S. Lyon,
George C. McConnaughey,
SOLICITORS & COUNSEL FOR PLAINTIFFS

Raymond Ives Blakeslee,
Kelly L. Taulbee,
SOLICITORS & COUNSEL FOR DEFENDANT

APPROVED AND SO ORDERED,
Los Angeles, Cal., March 20, 1933:
Paul J. McCormick
U. S. DISTRICT JUDGE

APPROVED AND SO ORDERED,
San Francisco, Cal., March 22, 1933:
Curtis D. Wilbur
JUDGE U. S. CIRCUIT COURT OF APPEALS.

[Endorsed]: Filed Mar 23 1933 R. S. Zimmerman, Clerk By Theodore Hocke Deputy Clerk

[TITLE OF COURT AND CAUSE.]

ORDER RE NUMBER OF BOOKS OF EXHIBITS TO BE PRINTED

For good cause shown, it is hereby

ORDERED that in the preparation and printing of the within record on appeal taken by defendant there shall be printed six books of exhibits, three of which shall be filed with the Clerk of the United States Circuit Court of Appeals for the Ninth Circuit, two copies to solicitors and counsel for plaintiffs herein, and the remaining one copy to the solicitors and counsel for defendant.

Dated, Los Angeles, California, March 21st, 1933.

Paul J McCormick
U. S. DISTRICT JUDGE

APPROVED:

San Francisco, Cal., March 22, 1933.

Curtis D Wilbur
JUDGE U. S. CIRCUIT COURT OF APPEALS

[Endorsed]: Filed Mar 23 1933 R. S. Zimmerman, Clerk By Theodore Hocke Deputy Clerk

[TITLE OF COURT AND CAUSE.]

STIPULATION AND ORDER RE BOOK OF EXHIBITS

IT IS HEREBY STIPULATED AND AGREED, by and between counsel for the above respective parties, that in the preparation and printing of the within record on appeal taken by defendant the following exhibits and things may be included in a printed book of exhibits:

Plaintiffs' Exhibits on Trial

1. Smith patent in suit, No. 1,262,860
2. Original assignment of Smith patent application to Buckeye Incubator Co.
3. Original assignment of patent from Buckeye Incubator Co. to Smith, dated April 29, 1927.
4. Chart prepared and discussed by witness Taggart.
5. Diagram prepared for and discussed by witness Taggart (as illustrative of the witness' testimony only).

9-A, 9-B, 9-C, 9-D—Four photographs

10. Diagram headed "Figure 1."
11. Diagram.
12. Drawing, (containing red ink markings, and also marked as Defendant's Exhibit D).
16. Correspondence and registry receipt.
17. Photostatic copy of John L. Robbins certification.

18. Two sketches (illustrative of the witness' testimony only).
19. Robbins patent No. 1,732,280
20. Petersime patent No. 1,562,787

Plaintiffs' Exhibits on Depositions

A-3. Paper containing Mrs. Graham's hand-writing.

A-7a, b and c. Rule drawings.

A-8. Lawry affidavit.

Defendant's Exhibits on Trial

A-1 Patent No. 3,019—March 30, 1843, Guerin.

A-2 Patent No. 120,253, October 24, 1871, Endemann.

A-3 Patent No. 152,644, June 30, 1874, Jones, et al.

A-4 Patent No. 240,004, April 12, 1881, Bate.

A-5 Patent No. 272,744, February 20, 1883, Morgan.

A-6 Patent No. 286,756, October 16, 1883, Winkler.

A-7 Patent No. 297,676, April 29, 1884, Conant.

A-8 Patent No. 320,463, June 23, 1885, Cutting.

A-9 Patent No. 330,457, November 17, 1885, Bassini, et al.

A-10 Patent No. 344,474, June 29, 1886, Campbell.

A-11 Patent No. 410,110, August 27, 1889, Knowles & Proctor

A-12 Patent No. 432,282, July 15, 1890, Proctor & Knowles

A-13 Reissue Patent No. 11,460, December 25, 1894, Proctor

A-14 Patent No. 535,175, March 5, 1895, Schwartz Jr.

A-15 Patent No. 553,723, January 28, 1896, Proctor.

A-16 Patent No. 559,676, May 5, 1896, Christianson

A-17 Patent No. 591,870, October 19, 1897, Morgan

A-18 Patent No. 691,837, January 28, 1902, Bell

A-19 Patent No. 709,650, September 23, 1902, Scott

A-20 Patent No. 725,079, April 14, 1903, Hawkins

A-21 Patent No. 745,458, December 1, 1903, Perkins

A-22 Patent No. 798,697, September 5, 1905, Perkins

A-23 Patent No. 828,181, August 7, 1906, Boyd

A-24 Patent No. 886,325, April 28, 1908, Osborne

A-25 Patent No. 891,019, June 16, 1908, Verna

A-26 Patent No. 916,273, March 23, 1909, Coons

A-27 Patent No. 916,454, March 30, 1909, Koons

A-28 Patent No. 949,653, February 15, 1910, Klinke

A-29 Patent No. 1,075,747, October 14, 1913, Zimmer

A-30 Patent No. 1,100,146, June 16, 1914, Olson

A-31 Patent No. 1,137,752, May 4, 1915. Goldstein

A-32 Patent No. 1,160,793, November 16, 1915, Van Keuren

A-33 Patent No. 1,165,958, December 28, 1915, Freas

A-34 Patent No. 1,205,445, November 21, 1916, Fullington

A-35 German Patent No. 117,089, November 21, 1899 and February 4, 1901, Mann.

A-36 German Patent No. 155,917, November 7, 1901, and November 11, 1904, Stulik.

B Certified copy file wrapper and contents of Smith patent in suit No. 1,262,860.

E Sketch or diagram of air currents in the Robbins machine.

F Copy of Robbins patent No. 1,728,980, dated September 24, 1929.

Dated, Los Angeles, California, February 23, 1933.

A. L. Ely,
Leonard S. Lyon,
George C. McConnaughey,
Solicitors and Counsel for Plaintiffs.

Raymond Ives Blakeslee,
Kelly L. Taulbee,
Solicitors and Counsel for Defendant.

APPROVED AND SO ORDERED:

Paul J McCormick
U. S. District Judge

Los Angeles, Cal., March 20, 1933.

Charles D Wellborn
U. S. Circuit Court of Appeals Judge

San Francisco, Cal., March 25, 1933.

[Endorsed]: Filed Mar 23 1933 R. S. Zimmerman, Clerk By Edmund L. Smith, Deputy Clerk

[TITLE OF COURT AND CAUSE.]

DEFENDANT'S PRAECIPE ON APPEAL PURSUANT TO EQUITY RULE 75.

TO THE CLERK OF THE COURT:

Please include in Transcript On Appeal taken by Defendant from the Final Decree filed and docketed as of August 2, 1932, to the United States Circuit Court of Appeals for the Ninth Circuit, the following papers, documents and things, some of which will be presented to you, together with any proper additional portions of the record to be designated by such Praecipe as appellees and cross-appellants may file herein pursuant to and under said Rule. The Transcript will be put in printed form for your final certification.

Certain exhibits and things are to be reproduced in a printed book of exhibits while all other exhibits and things not included therein nor in the Transcript of the Record proper are to go up as physical exhibits pursuant to the Order allowing defendant's appeal herein.

FILING or RECORD DATE

1929

November 22—Bill of Complaint.

December 9—Answer of Defendant to Bill of Complaint.

1930

June 15—Order of Reference with Exception to Defendant.

August 1—Report of Special Master.

" 15—Exceptions of Plaintiffs to Report of Special Master.

" 19—Exceptions of Defendant to Report of Special Master.

December 2—Order Allowing Withdrawal of Fullington Exhibit A and Allowing Amendment to Answer of Defendant to Conform to Proofs to be taken.

" 3—Order Reopening Cause for Taking Further Proofs and Referring Cause Back to Special Master.

" 6—Amendment to Answer of Defendant.

" 9—Supplemental Amendment to Answer of Defendant.

1931

August 21—Supplemental Report of Special Master.

September 8—Exceptions of Defendant to Supplemental Report of Special Master.

1932

June 30—Order Denying Exceptions to Reports of Special Master and For Decree for Plaintiffs with Exception to Defendant.

July 2—Motion, Notice and Petition of Defendant for Rehearing.

July 29—Reply of Plaintiffs and Motion to Dismiss Petition for Rehearing.

August 2—Order Denying Petition of Defendant for Rehearing, With Exception to Defendant, and Settling Decree, etc.

" 2—Reporter's Transcript of Arguments on Rehearing and Settling Decree. (One volume)

" 2—Final Decree

" 2—Order on Findings of Fact and Conclusions of Law.

" 12—Petition of Defendant for Appeal and for Supersedeas of Costs.

" 12—Defendant's Assignment of Errors.

" 12—Defendant's Bond on Appeal including Supersedeas of Costs in District Court.

" 12—Order Allowing Appeal of Defendant and for Supersedeas of Costs.

" 12—Citation to Plaintiffs.

" 12—Petition of Plaintiffs for Cross Appeal.

" 12—Plaintiffs' Assignment of Errors on Cross Appeal

" 12—Plaintiffs' Bond on Cross Appeal.

" 12—Order Allowing Plaintiffs' Cross Appeal.

" 15—Citation to Defendant on Plaintiffs' Cross Appeal

September 7—Writ of Injunction.

MISCELLANEOUS DATES

Last Stipulation and Order extending time in which to file Transcripts and docket both Appeals.

Condensed Statement of Evidence.

This Praecipe

Any Praecipe of Defendant

Stipulation and Order Specifying Exhibits to be Included in Book of Exhibits.

Book of Exhibits above mentioned.

Stipulation and Order Omitting Titles, etc., from all Pleadings.

Documents and Papers Comprising the Printed Record and Book of Exhibits herein, etc.

Copy all Docket entries.

Stipulation and Order re Transmission of Physical Exhibits to Clerk of Circuit Court of Appeals

Stipulation Approving Condensed Statement of Evidence Pursuant to Equity Rule 75

DATED: Los Angeles, California, February 23, 1933.

Raymond Ives Blakeslee,
Kelly L. Taulbee,
Solicitors and Counsel for Defendant.

IT IS HEREBY STIPULATED that the foregoing praecipe constitutes a complete praecipe for both parties on the above appeal.

Dated, Los Angeles, California, February 23, 1933.

A. L. Ely,
Leonard S. Lyon
George C. McConnaughey,
Solicitors and Counsel for Plaintiffs

Raymond Ives Blakeslee,
Kelly L. Taulbee,
Solicitors and Counsel for Defendant

[Endorsed]: Filed Mar 20 1933 R. S. Zimmerman, Clerk By Edmund L. Smith, Deputy Clerk

[Title of Court and Cause.]

CLERK'S CERTIFICATE.

I, R. S. Zimmerman, clerk of the United States District Court for the Southern District of California, do hereby certify the foregoing volume containing 664 pages, numbered from 1 to 664 inclusive, together with Volume II (the book of exhibits) containing 461 pages, numbered from 1 to 461 inclusive, to be the Transcript of Record on Appeal in the above entitled cause, as printed by the appellant, and presented to me for comparison and certification, and that the same has been compared and corrected by me and contains a full, true and correct copy of the citation to plaintiffs; citation to defendant on plaintiffs' cross-appeal; docket entries: bill of complaint; answer; order of reference with exception to defendant; report of special master; exceptions on behalf of the plaintiffs to report of special master; exceptions of defendant to report of special master; order allowing withdrawal of Fullington Exhibit A and allowing amendment to answer of defendant to conform to proofs taken; order reopening cause for taking further proofs and referring cause back to special master: amendment to answer of defendant; supplemental amendment to answer of defendant; supplemental report of special master; exceptions to supplemental report of special master on re-reference; order denying exceptions to reports of special master and for decree for plaintiffs with exception to defendant: notice of petition for rehearing and petition for rehearing; reply to and motion to dismiss petition for rehearing; order denying petition of defendant for rehearing with exception to defendant; report-

er's transcript of proceedings on petition for rehearing; order on findings of fact and conclusions of law; final decree; condensed statement of evidence; stipulation approving condensed statement of evidence; writ of injunction; petition of defendant for appeal; defendant's assignment of errors; order allowing appeal of defendant; bond for cost on appeal for defendant; petition of plaintiffs for cross-appeal; plaintiffs' assignment of errors on cross-appeal; order allowing plaintiffs' cross-appeal; plaintiffs' bond on cross-appeal; stipulation and order extending time in which to file and docket transcript on appeal; stipulation and order re printed record; stipulation and order re physical exhibits; order re number of books of exhibits; stipulation and order specifying exhibits to be included in book of exhibits and praecipe.

I DO FURTHER CERTIFY that the amount paid for printing the foregoing record on appeal is $1257.12 and that said amount has been paid the printer by the appellant herein and a receipted bill is herewith enclosed, also that the fees of the Clerk for comparing, correcting and certifying the foregoing Record on Appeal amount to $123.56 and that said amount has been paid me by the appellant herein.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the Seal of the District Court of the United States of America, in and for the Southern District of California, Central Division, this 8th day of May, in the year of Our Lord One Thousand Nine Hundred and Thirty-three, and of our Independence the One Hundred and Fifty-seventh.

[Seal] R. S. ZIMMERMAN,
Clerk of the District Court of the United States of America, in and for the Southern District of California.

By Edmund L. Smith,
Deputy.

No. 7154

United States

Circuit Court of Appeals

For the Ninth Circuit.

HERBERT H. WAXHAM, doing business as Waxham Hatcheries,

Appellant and Cross-Appellee,

vs.

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY,

Appellees and Cross-Appellants.

Upon Appeal from the District Court of the United States for the Southern District of California, Central Division.

PROCEEDINGS HAD IN THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT.

At a Stated Term, to wit: The October Term A. D. 1933, of the United States Circuit Court of Appeals for the Ninth Circuit, held in the Court Room thereof, in the City and County of San Francisco, in the State of California, on Monday the fourteenth day of January in the year of our Lord one thousand nine hundred and thirty-four.

Present: Honorable CURTIS D. WILBUR, Senior Circuit Judge, Presiding, Honorable WILLIAM H. SAWTELLE, Circuit Judge, Honorable FRANCIS A. GARRECHT, Circuit Judge.

No. 7154

ORDER OF SUBMISSION.

ORDERED appeal in above cause argued by Mr. Raymond Ives Blakeslee, counsel for appellant, and by Messrs. Albert L. Ely and Leonard S. Lyon, counsel for appellees, and submitted to the court for consideration and decision, with leave to counsel for appellant to file a reply brief not exceeding 30 pages within twenty-five (25) days from date.

At a Stated Term, to wit: The October Term A. D. 1933, of the United States Circuit Court of Appeals for the Ninth Circuit, held in the Court Room thereof, in the City and County of San Francisco, in the State of California, on Monday the ninth day of April in the year of our Lord one thousand nine hundred and thirty-four.

Present: Honorable CURTIS D. WILBUR, Senior Circuit Judge, Presiding, Honorable FRANCIS A. GARRECHT, Circuit Judge, Honorable FRANK H. NORCROSS, District Judge.

No. 7154

ORDER DIRECTING FILING OF OPINION AND FILING AND RECORDING OF DECREE.

By direction of the court, ORDERED that the typewritten opinion this day rendered by this court in above cause be forthwith filed by the clerk and that a decree be filed and recorded in the minutes of this court in accordance with the opinion filed.

[Title of Court and Cause.]

OPINION.

Upon Appeal from the District Court of the United States for the Southern District of California, Central Division.

Before: WILBUR, SAWTELLE and GARRECHT, Circuit Judges.

WILBUR, Circuit Judge:

This suit was brought by Samuel B. Smith, patentee, and the Buckeye Incubator Company, a licensee, under patent No. 1,262,860, issued April 16, 1918, for an incubator, against Herbert H. Waxham for the infringement of said patent by the use of an incubator known as Robbins No. 23 incubator purporting to be manufactured under and pursuant to patent No. 1,728,980, issued September 24, 1929 to J. L. Robbins. The matter was referred to a special master who reported that the Smith patent was valid and was infringed. This decision was affirmed by the District Court and defendant appeals from the decree. Samuel B. Smith and the Buckeye Incubator Company also appeal from that portion of the decree which held that the defendant did not infringe claim No. 2 of the patent. The Smith patent has been so frequently before the courts and so often described in the numerous opinions filed that we will curtail our description so far as possible.

The claim of the appellees is that the Smith patent and method have completely revolutionized the art of hatching eggs in incubators. In support of that contention they point out that since the patent was issued more than $20,000,000 worth of incubators manufactured thereunder have been sold with a total capacity of over 159,000,000 eggs.

The art of hatching eggs by incubators is old. The claim advanced is that under all the old methods a relatively small number of eggs could be placed in the incubator at one time; that by the method described in the Smith patent it is possible to increase the number of eggs in the incubator at one time, almost indefinitely, incubators manufactured under the patent having a capacity of from 25,000 to 50,000 eggs being in common use. The claims of the invention which are involved in this action are Nos. 1 and 2, as follows:

> "1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of

incubation to those in a less advanced stage for the purpose specified.

"2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

In the incubation of eggs they begin to give off heat and to absorb oxygen and give off carbon dioxide about the fifth day. Up to that time it is necessary to supply artificial heat to start the process of incubation. Thereafter it is essential to supply the necessary oxygen and remove the carbon dioxide, and also to remove the heat developed by the egg itself. The removal of heat from the eggs was ordinarily accomplished by reducing the temperature in the incubator so that a circulation of air was produced by the heated air arising from the egg being replaced by the colder air enclosed in the incubator, that is, by convection. The Smith method of incubation instead of relying upon the gentle

currents of air thus produced contemplates a large volume of air in an enclosed chamber kept at a uniform temperature of from 100 to 105° circulated by means of fans with such great velocity that it prevents the building up of small quantities of superheated air in immediate contact with the eggs generating heat during the last stages of incubation. The same movement of air which removes the excess heat from the egg also removes the carbon dioxide in immediate contact with the shell of the egg and replaces it with air in the average condition of heat, moisture and purity in the incubator. The temperature of the air in the incubator is regulated by thermostatic control, additional heat being necessary to that supplied by the eggs in the latter stages of incubation. To get rid of the excess carbon dioxide given off by the hatching chicks, a small vent from the large incubator chamber is provided and from the vent a small amount of air is constantly escaping, being replaced by fresh air drawn in by the ventilating fan and forced into the incubating chamber to mix with the large volume of air which is being constantly circulated by the fan. The recirculation of the air tends to conserve the moisture in the eggs and reduce the cost and simplify the method of heating. Apparently the key to the problem of incubation in mammoth incubators by what is known as staged incubation, lay in the ability to maintain a constant temperature in the incubating compartment. To do this it is necessary that the air currents in the incubator

move with comparatively high velocity. This velocity in the Smith machine is obtained by a number of comparatively small electric fans. In the operation of the Smith machine the velocity of the column of air leaving the fan is about 1200 feet per minute. Its speed when it enters the region of the hatching trays is approximately 250 feet per minute, up through the hatching trays from 20 to 40 feet per minute, up through the tilting trays varies from 50 to 60 as high as 150 feet per minute, and as the column of air returns to the fan where it crosses the beams at the top is approximately 500 feet per minute. In the machines manufactured under the Smith patent the fresh eggs are placed at the top of the column and the eggs in the last stages of incubation are at the bottom, the eggs being lowered from day to day as the chicks are moved from the lower boxes.

The validity of this patent has been sustained in every decision heretofore rendered in which the patent has been involved. Three of the decisions were rendered by Circuit Courts of Appeals. Buckeye Incubator Co. v. Wolf, 291 Fed. 253, affirmed in Wolfe v. Buckeye Incubator Co. (C. C. A. 6), 296 Fed. 680; Buckeye Incubator Co. v. Cooley (C. C. A. 3), 17 F. (2d) 453; Buckeye Incubator Co. v. Blum, 17 F. (2d) 456, affirmed (C. C. A. 6), 27 F. (2d) 333; Buckeye Incubator Co. v. Petersime (C. C. A. 6), 19 F. (2d) 721; Buckeye Incubator Co. v. Hillpot, 22 F. (2d) 855, affirmed (C. C. A. 3), 24 F. (2d) 341; Miller Hatcheries v. Buckeye Incubator Co. (C. C. A. 8), 41 F. (2d) 619. Not-

withstanding these decisions the appellant contends that the patent is invalid on the ground that it was anticipated in the prior art and contends that some features of the prior art were not presented, or if presented were not considered in the decisions heretofore rendered sustaining the patent. In view of the decisions above referred to interpreting the Smith patent we deem it unnecessary to further discuss either the nature or character of the invention or to describe the method of incubation covered by the Smith patent or to attempt to define the limitations placed upon the patent by these decisions which in that regard are not entirely consistent.

One of the prior uses principally relied on by appellant is the Fullington prior use which is the only one relied on which has not been before the courts in prior cases involving the validity of the Smith patent. This device consisted of a small incubator of the still air type adopted to hold approximately one hundred eggs in a single tray and at single setting to which Fullington attached a fan operated by dry cell batteries. The temperature in the incubator was controlled by a thermostat connected to the fan and when the temperature rose above a certain point the thermostat caused the fan to start up blowing fresh cool air into the incubator from the outside and discharging an equivalent amount of hot foul air out of the incubator through vents placed in the incubator for that purpose. When the temperature was re-

duced to the proper degree the thermostat acted to stop the fan. In the Fullington device there was no definite continuous current of air circulating as has been held to be essential in the Smith patent, but the fan operated only intermittently when the air in the incubator became too hot. Nor was the idea of staged incubation incorporated in the Fullington use as Fullington testified that all the eggs were set at the same time on a single tray and not with spaced tiers or layers of eggs one above the other in different stages of incubation. This fan attachment was used for only three settings when its use was abandoned and the incubator was thereafter used without it. The sole purpose sought to be obtained by the Fullington device was to keep the eggs from overheating and the Fullington prior use falls far short of anticipating the Smith patent which utilizes the heat generated by the eggs in the last stages of incubation to heat the eggs in the earlier stages, and conversely, the lower temperature of the latter eggs to reduce the temperature of the eggs in the later stages. The other prior use principally relied upon by the appellant to defeat the Smith patent is that by Lawry. Lawry did provide for a large chamber of heated air in which the eggs were placed. He did provide small vents above and below this chamber through which the air entered and escaped from the incubating chamber. The air in the Lawry process was given some momentum by an electric fan but the effect of this momentum was almost entirely dissipated by the fact that the current of air was forced

through a large number of small openings and escaped through similar openings to return through narrow passages to the fan to be again circulated through the incubation chamber. The obvious purpose of Lawry in this method of incubation was to supply fresh air without agitating the contents of the incubating chamber any more than was necessary to supply the fresh air. Apparently there was no effort to remove the heat from the incubating eggs by a current of high velocity. The plan was a failure and was abandoned and need not be further considered. We conclude that the Smith patent is valid.

The next question is whether it is infringed by the incubator used by the appellant Waxham purporting to be manufactured under the Robbins patent. Claims 1 and 2 of the Robbins patent are as follows:

> "1. An incubator comprising an elongated compartment whose front side is formed by doors that may be opened and closed, an egg tray rack located within the compartment, said rack being supported by a shaft extending lengthwise of the compartment and located closer to the front than to the rear wall, the rack being provided with transversely extending slides for supporting egg trays, egg trays carried on said slides, a fan located between the rear of the egg tray rack and the rear wall of the compartment and rotatable about a horizontal axis perpendicular to the rear wall, and means for rotating the fan so as to produce an

air current that travels from the fan towards the doors directly in front of the fan whereby the air will return towards the fan along the outside of the central air current.

"2. An incubator comprising an elongated compartment whose front side is provided with doors that may be opened and closed, an egg tray rack located within the compartment, said rack being provided with transversely extending slides for supporting egg trays, egg trays carried on the slides, a fan located between the egg tray rack and the rear wall of the compartment and rotatable about a horizontal axis substantially perpendicular to the rear wall whereby when the fan is rotated it will produce an air current that travels through the egg tray rack between the super-positioned egg trays, and means for turning the eggs."

This patent contemplated the rotation of a large fan in the incubating chamber, thus generating air currents. The patent states that the currents travel directly forward from the fan toward the door and return along the walls of the chamber "along the outside of the central air current", that is to say, the patent contemplates currents of air generated by the fan moving from the fan through the eggs in the chamber and returning to the fan. This is exactly what is done by the method outlined in the Smith patent. The differences, however, are two: In the Smith patent the air moves in vertical columns pass-

ing downward from the fan and returning upward thereto. The two columns, that is, the down column and the up column, are separated by a curtain. The upward current is caused by the downward current striking the bottom of the incubator and mushrooming under the curtain and drawn upward by the suction of the fan and by the pressure of the downward column of air. According to the Robbins patent the same thing is accomplished without the curtain and the current revolves in a horizontal instead of a vertical plane. Obviously these differences are of no significance. They are mere substitutes for the plan in the Smith patent. If an improvement results from the elimination of the curtain it is nevertheless an infringement of the Smith patent The machine operated by the appellant Waxham, however, does not operate in accordance with the claims of the Robbins patent. In fact, according to the findings of the master, the air currents move in exactly the opposite direction from that described in the patent; that is to say, the air is forced from the periphery of the large fan operating in the enclosed space to the walls of the incubating chamber and follows the side walls to the front doors where, striking those doors, it is deflected inward and then drawn to the center of the fans by the suction resulting from the outward movement of the air along the blades of the fan to their periphery. In actual operation the fan is large and moves with high velocity so that the current of air leaving the periphery of the fan and going outwardly along the walls

of the chamber is moving about 900 feet per minute, its speed when it strikes the front wall of the chamber and turns inwardly is about 250 feet per minute, and as it passes through and around the trays on returning to the fan its speed varies from 40 to 350 feet per minute, increasing as it nears the vortex of the fan to as high as 600 feet per minute. There is a definite and continuous current of air utilized in the Waxham device moving at a velocity not materially different from the speed of the air current in the Smith patent and accomplishing substantially the same purpose.

The appellant seeks to avoid the claim of infringement by reason of the fact that the eggs in his machine are not placed in a single column with the fresh eggs at the top and eggs which are hatching at the bottom, but are distributed through the chamber without any endeavor to place them in this exact relationship. This difference is clearly immaterial where the air in a chamber is kept at a constant and uniform temperature and rapidly circulated. The result of currents of air moving with high velocity would be to transfer heat from the older eggs to the fresher and colder eggs in either event. The important thing is the high velocity of the air current, avoiding stagnation in the immediate vicinity of the eggs in later stages of incubation.

The appellant relies upon the decision of the Circuit Court of Appeals in the Petersime case where it was held that a device which merely agitated the air in the incubating chamber did not infringe the Smith

patent. We are not concerned with such a device in this case. We have indicated in another case recently filed that the findings of the master on the question of infringement, approved by the trial court, should be given great weight. Stoody Co. v. Mills Alloys, 67 F. (2d) 807. In this case we are satisfied that the decision of the master is correct for the reasons we have stated, and for others which are more elaborately stated by the master and which we need not repeat.

With reference to the cross appeal of the plaintiffs we do not see how it can be seriously contended that the second claim of the patent is infringed and there is no argument thereon in the briefs. Claim 2 of the Smith patent contemplates a power driven current of heated air originating in an adjacent chamber and passing through openings into the egg chamber and in the Waxham device there is no adjacent chamber and the air currents are entirely within the enclosed chamber.

Decree affirmed.

(Endorsed): Opinion. Filed Apr. 9, 1934. Paul P. O'Brien, Clerk.

United States Circuit Court of Appeals
For the Ninth Circuit

No. 7154.

HERBERT H. WAXHAM, Doing Business as Waxham Hatcheries,

Appellant,

vs.

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY,

Appellees.

DECREE.

APPEAL from the District Court of the United States for the Southern District of California, Central Division.

THIS CAUSE came on to be heard on the Transcript of the Record from the District Court of the United States for the Southern District of California, Central Division, and was duly submitted:

ON CONSIDERATION WHEREOF, it is now here ordered, adjudged, and decreed by this Court, that the decree of the said District Court in this cause be, and hereby is, affirmed with costs in favor of the appellees and against the appellant.

IT IS FURTHER ORDERED, ADJUDGED, AND DECREED by this Court, that the appellees recover against the appellant for their costs herein expended, and have execution therefor.

[Endorsed]: Filed and entered Apr. 9, 1934. Paul P. O'Brien, Clerk.

At a Stated Term, to-wit: The October Term A. D. 1933, of the United States Circuit Court of Appeals for the Ninth Circuit, held in the Court Room thereof, in the City and County of San Francisco, in the State of California, on Friday the fifteenth day of June in the year of our Lord one thousand nine hundred and thirty-four.

PRESENT: Honorable CURTIS D. WILBUR, Senior Circuit Judge, Presiding, Honorable WILLIAM H. SAWTELLE, Circuit Judge.

No. 7154

ORDER DENYING PETITION FOR A REHEARING.

Upon consideration thereof, and by direction of the court, IT IS ORDERED that the petition of appellant, filed May 7, 1934, for a rehearing of above cause be, and hereby is denied.

[Title of Court and Cause.]

PETITION FOR STAY OF MANDATE PENDING ANY APPLICATION FOR WRIT OF CERTIORARI.

Comes now appellant herein, above named, and petitions this Honorable Court for stay of mandate in this cause of thirty (30) days from and after the determination of appellant's petition for rehearing of this cause, should such petition for rehearing be denied, and which petition for rehearing is transmitted to the Clerk of this Court with this present petition; such extension being conditioned that appellant file his petition for certiorari with the Clerk of the Supreme Court within such period of thirty (30) days, and in that event that the mandate be stayed until after the Supreme Court passes upon such petition for certiorari.

Dated, Los Angeles, California, May 5, 1934.

RAYMOND IVES BLAKESLEE,
Solicitor and Counsel for Appellant and Cross-Appellee.

[Endorsed]: Filed Jun. 15, 1934. Paul P. O'Brien, Clerk.

[Title of Court and Cause.]

ORDER STAYING ISSUANCE OF MANDATE.

Upon application of Mr. Raymond Ives Blakeslee, counsel for the appellant, and good cause therefor appearing, IT IS ORDERED that the issuance, under Rule 32, of the mandate of this Court in the above cause be, and hereby is stayed to and including July 23, 1934; and in the event the petition for a writ of certiorari to be made by the appellant herein be docketed in the Clerk's office of the Supreme Court of the United States on or before said date, then the mandate of this Court is to be stayed until after the said Supreme Court passes upon the said petition.

CURTIS D. WILBUR,
United States Circuit Judge.

Dated: San Francisco, California,
June 15, 1934.

[Endorsed]: Filed Jun. 15, 1934. Paul P. O'Brien, Clerk.

[Title of Court and Cause.]

CERTIFICATE OF CLERK U. S. CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT, TO RECORD CERTIFIED UNDER RULE 38 OF THE REVISED RULES OF THE SUPREME COURT OF THE UNITED STATES.

I, PAUL P. O'BRIEN, as Clerk of the United States Circuit Court of Appeals for the Ninth Circuit, do hereby certify the foregoing volume I, consisting of six hundred and eighty-six (686) pages, numbered from and including 1 to and including 686, (together with single copy of volume, marked Volume II, Book of Exhibits, consisting of 468 pages, numbered from and including 1 to and including 468), to be a full, true and correct copy of the entire record, excluding other original exhibits, of the above-entitled case in the said Circuit Court of Appeals, made pursuant to request of counsel for the appellant, and certified under Rule 38 of the Revised Rules of the Supreme Court of the United States, as the originals thereof remain on file and appear of record in my office.

ATTEST my hand and the seal of the said the United States Circuit Court of Appeals for the Ninth Circuit, at the City of San Francisco, in the State of California, this 26th day of June, 1924.

[Seal] PAUL P. O'BRIEN,
Clerk.

SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1934

No. 208

ORDER ALLOWING CERTIORARI—Filed October 8, 1934

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Ninth Circuit is granted. And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.